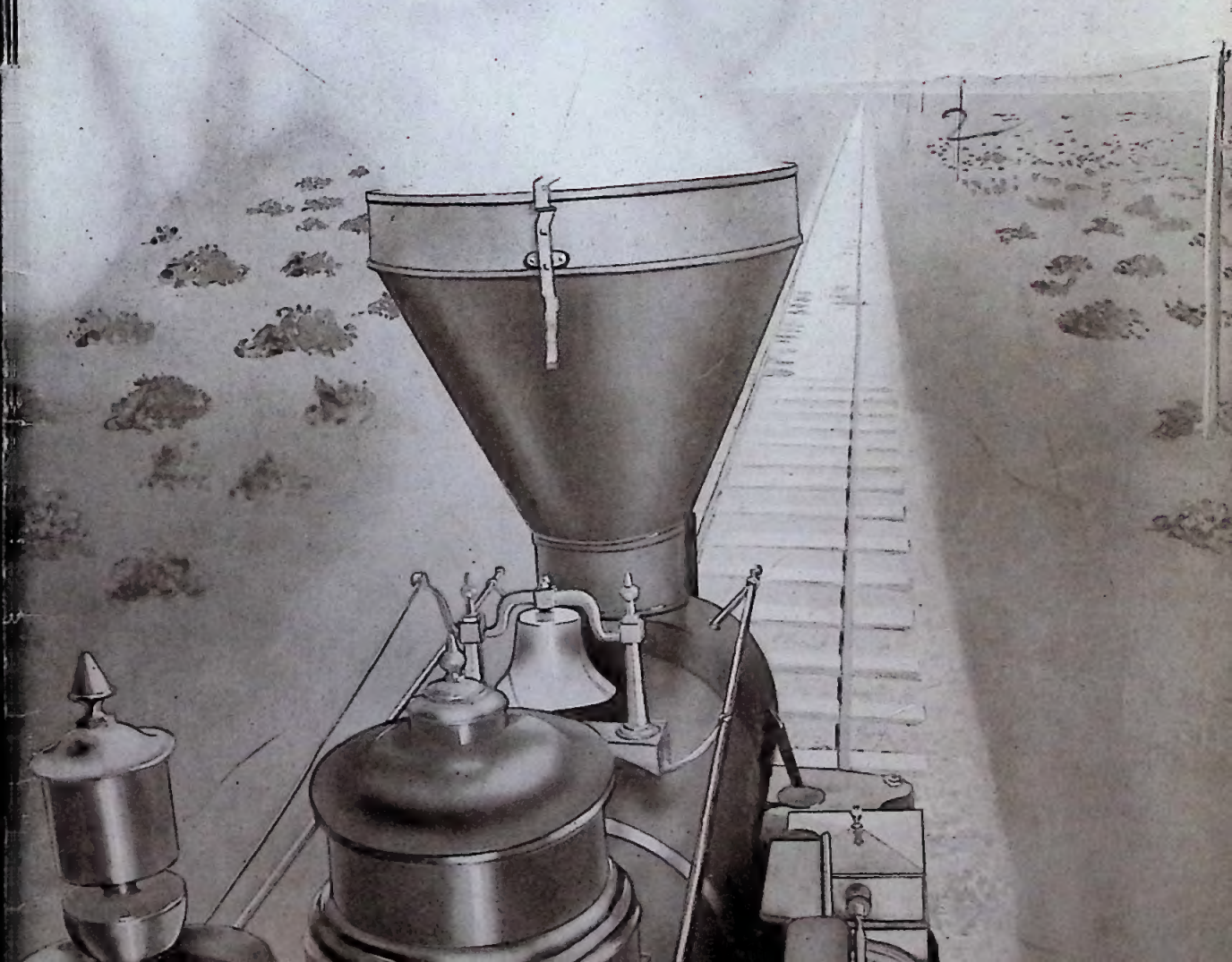
Trains

MAY

25¢



SPECIAL MENTION FOR PICTORIAL MERIT. KENT DAY COES.

The Middletown & Unionville.

A one-locomotive, 14.6-mile road is the M&U, which runs south from Middletown, N. Y., on the main lines of the Erie and the New York, Ontario & Western, to Hanford, N. J., where it connects with the New York, Susquehanna & Western for Jersey City and northern New Jersey points. A traffic interchange agreement with the NYO&W and the Susquehanna keeps the road busy as a connecting link. It was built in 1874 as the Middletown, Unionville & Water Gap and leased to the Susquehanna until 1913, when it began its independent existence.

Kent Day Coes, 22 Seymour St., Montclair, N. J.

Trains

Editors: A. C. Kalmbach, Linn H. Westcott, Willard V. Anderson

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and Miscellany.

Cover drawing by Linn H. Westcott.

Masthead decoration by courtesy of Southern Pacific.

Waybills

Many readers have written us, criticizing the railroads for cutting train schedules in the present emergency while empty and unused passenger cars can often be seen in yards. Truth of the matter is that in all parts of the country there is an acute shortage of passenger equipment. The assignment of cars to a regular train day after day makes these cars unavailable for not only the ordinary peak passenger traffic of holidays, week ends and bad driving weather, but also for troop movements. A railroad would indeed be selling our national defense short if it assigned 25 or 30 passenger cars to an additional inter-city train and then found itself short of equipment and unable to handle a vitally necessary troop movement.

The truly unusual photo which we spread across the two center pages of last month's TRAINS was credited by our error to Richard Kindig of Denver. It was actually taken by his friend John Maxwell, who is now in the army.

A. C. K.

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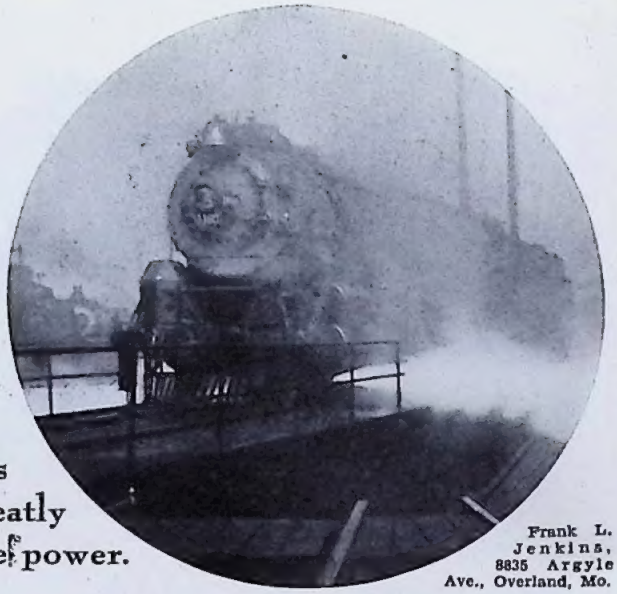
Missouri Pacific Locomotives



Frank L. Jenkins, 8835 Argyle Ave., Overland, Mo.

★ This 7000-mile railroad offers a comprehensive display of neatly kept, attractive-looking motive power.

THE hefty-appearing modern locomotives of the Missouri Pacific are well representative of this medium sized road which so well blankets the area south, southwest, and west of St. Louis. The MoPac originated the 4-6-2 type of locomotive, which has ever since borne the name Pacific, and the company is today doing fine mechanical engineering work in redesigning and rebuilding its steam power for improved performance.

Right now the Sedalia shops are completely rebuilding 25 Berkshire (2-8-4 type) locomotives built by Lima in 1930, making them into 4-8-4's. Seventeen of these are already in service pulling fast freight between St. Louis and Pueblo, Colo., and turning in a very good account of themselves, especially as to mileage. The driver size of these engines has been increased from 63-inch to 75-inch, and the boiler lengthened. New cast engine beds are used, and roller bearings are installed throughout the engines and tenders.

The Mountain and Pacific type locomotives were not treated as drastically as the Berkshires, but some of each class were rebuilt in recent years to make them more efficient. Both of these classes are used in the fast passenger service west of St. Louis, including the popular St. Louis-Kansas City run.

Most prominent visible feature of all the rebuilt engines is the streamlined solid pilot with retractable coupler. This makes a big-looking engine out of even the small Pacific.

Missouri Pacific's only Mallet.

The true Mallet is a compound articulated locomotive, and that just fits the 4000. She is the only one of her type on MoPac, and is used in helper service over Kirkwood Hill west of St. Louis. Built by Baldwin in 1912, she has 26-and 40-inch by 32-inch cylinders, 55-inch drivers, weighs 454,400 pounds without tender, exerts 94,400 pounds tractive effort. The 12-wheel tender trucks are both fitted with boosters. The older Mallet locomotives such as this were designed for slow, heavy service, and hence had high maximum tractive effort, but were cumbersome machines of limited horsepower.

Missouri Pacific.

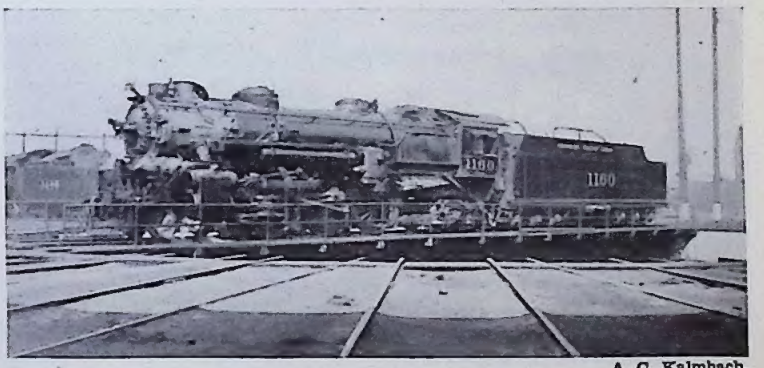
Classification system of Missouri Pacific locomotives.

Each railroad has its own private system of classifying its engines. Usually this consists of a combination letter and number symbol, such as A-1, C-3, etc., the letter designating the basic type according to wheel arrangement and the number designating the sub-class within the particular wheel arrangement. All these systems are, of course, based upon the Whyte system of classifying locomotives according to leading truck, drive, and trailer wheels. A 4-6-2 is, for example, an engine with four leading truck, six drive, and two trailing wheels. Common practice has assigned names to each type, and Missouri Pacific bases its classification symbols upon the initial for each type name, plus figures giving the driving wheel diameter in inches. Thus the basic Missouri Pacific classes are:

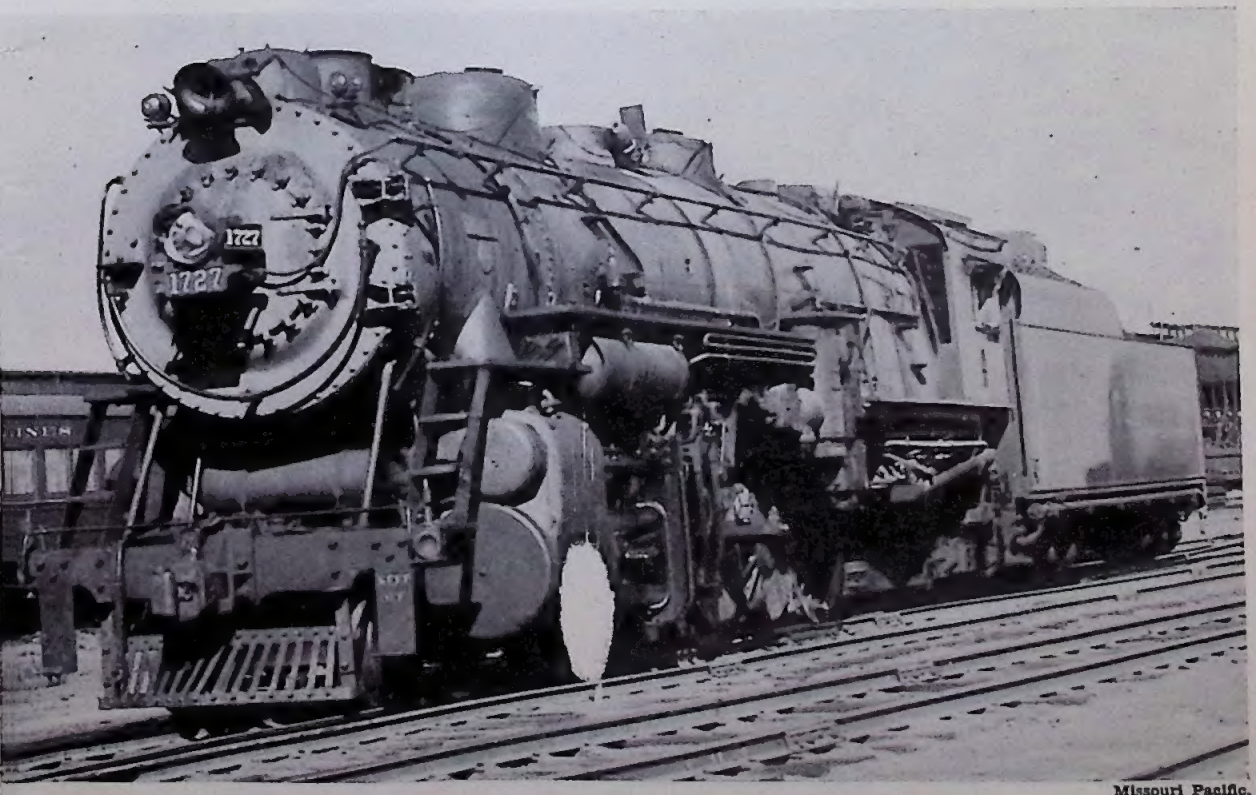
A	Atlantic	4-4-2	MK	Mikado	2-8-2	SF	Santa Fe	2-10-2
BK	Berkshire	2-8-4	ML	Mallet	2-8-8-2	SW	Switcher	0-6-0
C	Consolidation	2-8-0	MT	Mountain	4-8-2	SW8	Switcher	0-8-0
D	Decapod	2-10-0	N	Northern	4-8-4	TN	Ten-Wheeler	4-6-0
E	Eight-Wheel	4-4-0	P	Pacific	4-6-2	TW	Twelve-Wheeler	4-8-0

Below and right.

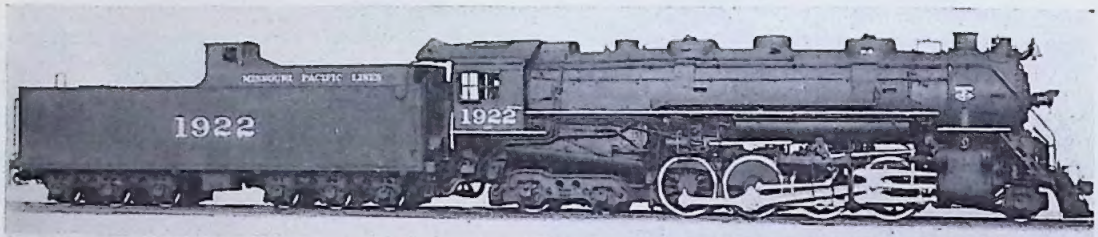
Pacific No. 1160 is one of 105 in service on Missouri Pacific Lines. Nine of these are roller-bearing oil-burners. The 1727 is a Santa Fe, one of 24 to this wheel arrangement. The SF-63 series, 1720-29, have tender boosters and maximum tractive effort of 96,000 pounds with booster cut in.

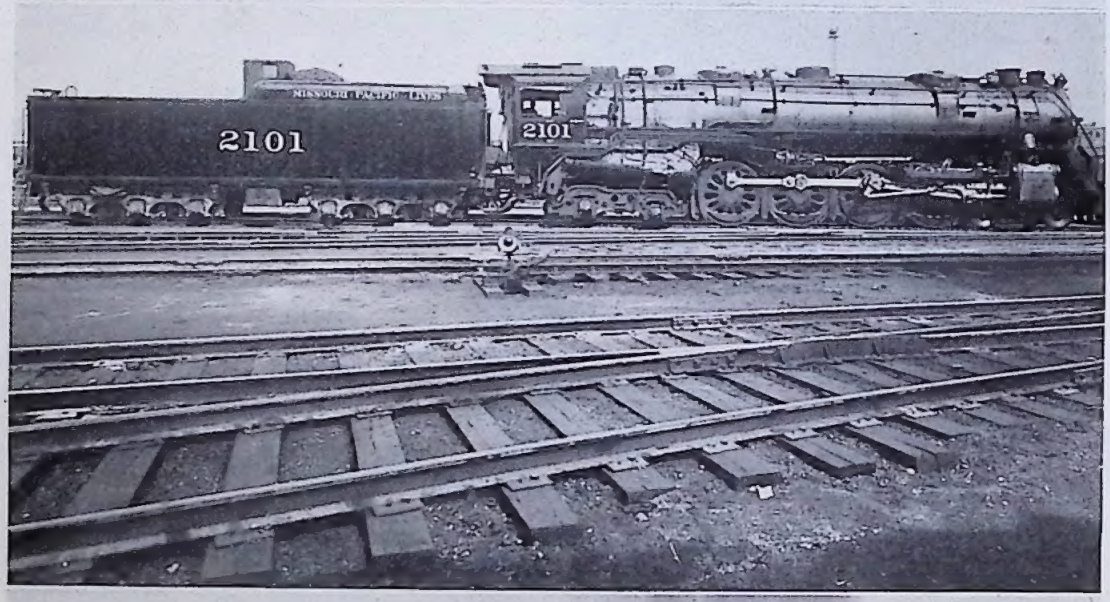


A. C. Kalmbach.

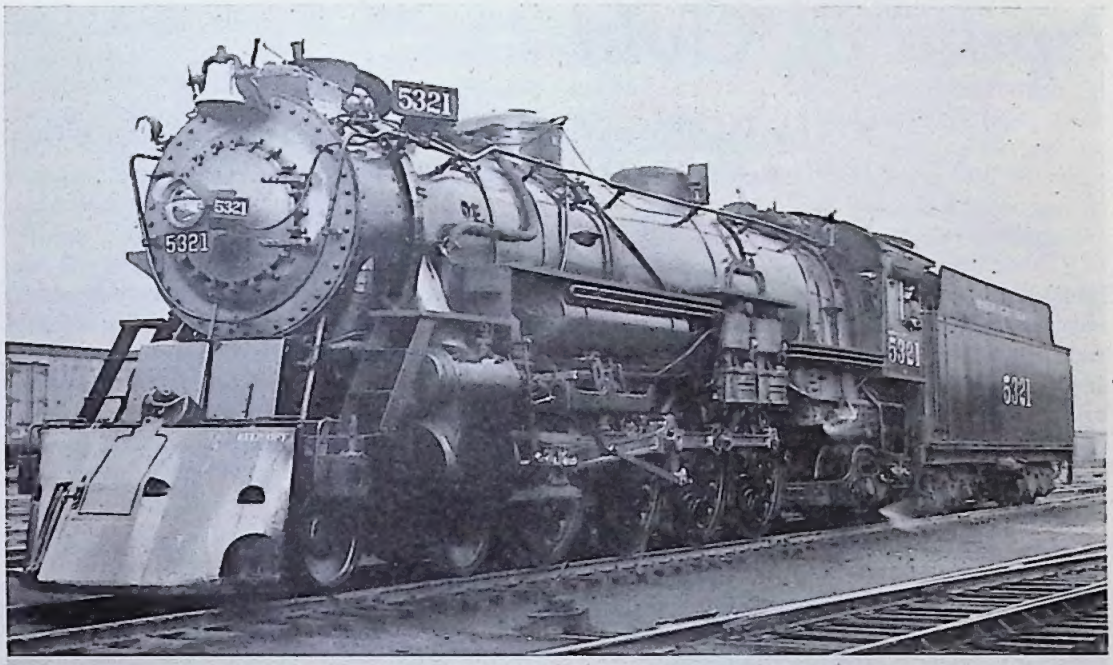


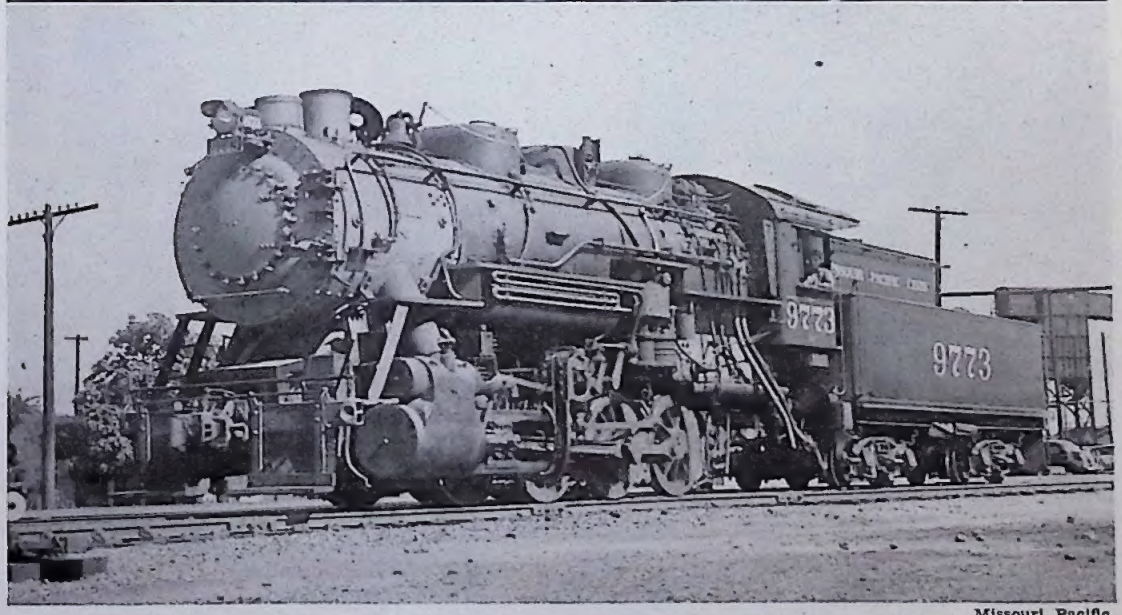
Missouri Pacific.





Missouri Pacific.





Missouri Pacific.

Eight-coupled engines on the Missouri Pacific roster.

The locomotive with eight drive wheels is predominant on American railroads, and most modern engines fall within this category. Missouri Pacific is well fitted out with eight-coupled power, including 296 Mikados which are the backbone of the freight service and of which the 1562 is a sample (169 others are identical). The 25 Berkshires of the 1901-25 clas are being converted to 4-8-4's of the 2101-25 class, leaving five Berkshires of the 1121-25 class still in service. The 33 Mountain type engines include 7 which have been rebuilt with roller bearings and oil burners and of which the 5321 is representative. The eight-wheel switcher, with all weight on drivers, is a strong puller, averaging nearly 60,000 pounds tractive effort or as much as many Mikados. Few roads have use for this much umph in switching service, but MoPac keeps 85 0-8-0's busy at various terminals. No. 9773 is one of the latest series, built by Lima in 1929. The Missouri Pacific is a hill-and-dale railroad with few mountain grades of any great length. The highest elevation on the line is 4600 feet at Pueblo, Colo.

*Spike of Gold**

★ The Pacific railway, united at Promontory, Utah, May 10, 1869, bound the Western states firmly to the Union.

THE building of the first transcontinental railroad is the Great American Epic. It is the story, a true story, of American enterprise to stand for all time. The Pacific railway bound our country together as a union of states from coast to coast, and from Monday, May 10, 1869, dates the final welding of that union by the physical bonds of steel.

Monday, May 10, 1869—a date to remember, a day of celebration in all the country! There was much rejoicing in the leading Eastern cities after the news was telegraphed

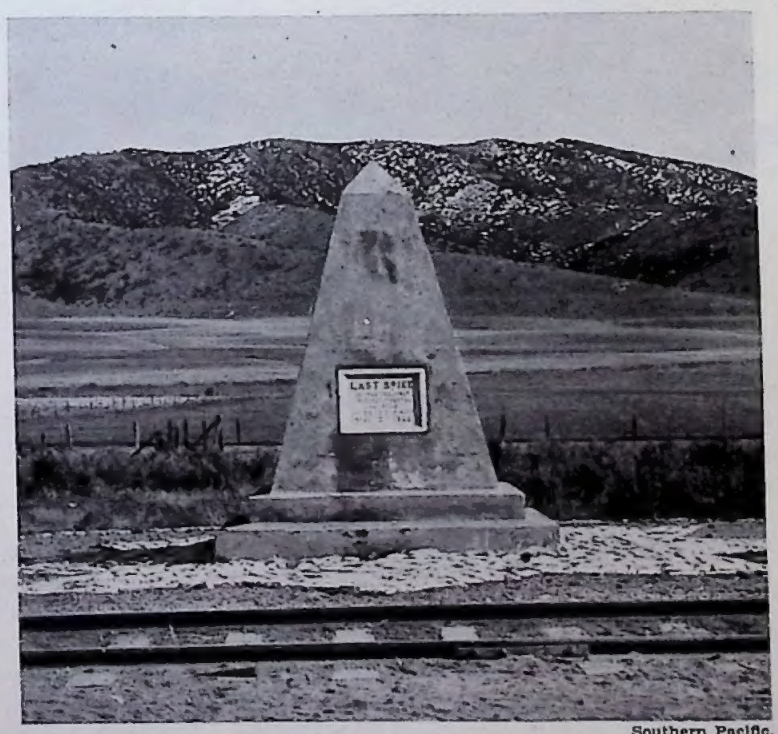
* Description of gold spike ceremony by W. H. Hulsizer, Manager of Properties, Union Pacific Railroad. Contemporary travelogue from collection of A. C. Kalmbach.

from Promontory, Utah. Commemorative services were held in New York City's Trinity Church, the chimes of which pealed the *Old Hundredth* (Praise God From Whom All Blessings Flow), and a hundred-gun salute was fired at the mayor's direction. The Liberty Bell in Independence Hall, Philadelphia, was rung. Chicago held a big celebration. Fire bells were sounded at St. Louis, Milwaukee, Cincinnati and other places. Omaha, the eastern terminal city, celebrated the eventful occasion as the greatest day it had known. San Francisco and Sacramento started a three-day celebration the Saturday before.

The new Pacific railway of 1869 was not a transcontinental railroad as we know it today. It was but a light line of steel curving and twisting over the mountains, running for hundreds and hundreds of miles through utterly desolate and unpopulated country. The railroad was only a thin link of connection between the builtup East and the remote state of California, which, except for the railroad, might not have become really tied to the rest of the United States. Beyond that the railroad was looked at as a new northwest passage to China. *Harpers Weekly,* February 27, 1869, said, "This railroad will result in the rehabilitation of Eastern Asia." The Suez Canal was opened at about the same time as a more direct all-water route to the Orient.

The Pacific Railroad Bill of 1862 was passed

Union Pacific.



Southern Pacific.

On the shore of ancient Bonneville.

On the shore of prehistoric Lake Bonneville (see shoreline markings on hillside in back of monument) men gathered from East and West to celebrate the completion of the first transcontinental railroad. The track at Promontory Summit runs north and south, and the straight-stacked Union Pacific engine (right) came from the north. The engine crews broke bottles of champagne ceremonially over the pilots. Not a movie reconstruction but the real thing, the photograph was taken shortly after the driving of the golden spike. Present-day monument, above, is on the east side of the track about where the two men are shaking hands. Application to abandon this trackage is before the I. C. C. Overland Route trains now run on Lucin Cutoff over Great Salt Lake, some miles south, a 1904 construction which shortened the line and eliminated grades.

Union Pacif

Construction at Green River.

Citadel Rock at Green River, Wyo., is today a scenic landmark on the Union Pacific and it looked much the same in early 1869, when the new railroad had just pushed through and the stone abutments for the Green River bridge were under construction. Green River is today an important division point, and the huge new 4-8-8-4 articulateds operate out of here.

by the Senate on June 20, by the House on June 24, and became a statute of the United States by the signature of President Lincoln on July 1, 1862. It created the Union Pacific Railroad Company* and empowered it to build from the Missouri River as far west as the Nevada-California state line; authorized the Central Pacific Railroad Company, a California corporation formed June 28, 1861, to build from the Pacific coast at or near San Francisco or the navigable waters of the Sacramento River to the California-Nevada boundary; lent to both companies government credit—bonds bearing 6 per cent interest, repayable, principal and interest, in 30 years; and gave them the right of way they occupied as well as alternate (odd-numbered) sections of the public lands on both sides of the railroad as it should be completed.

The aid thus offered to the companies, though substantial, was insufficient to attract capital necessary for construction, and the Act of July 1, 1862, was therefore amended July 2, 1864, by increasing the amount of the land grant and making other changes which had been asked for. Another amendment provided that each company could build until the two construction forces met. This precipitated a race to get the mileage and government subsidies, and as a result each company graded its right of way far ahead of the track work, the two grades actually overlapping each other.

The Union Pacific now commenced work on the eastern portion of the line at Omaha; the Central Pacific had already made a beginning at Sacramento, and when the Pacific railroad was completed the Central had built entirely across Nevada and into Utah to meet the Union at Promontory, north of Great Salt

* During the Civil War, it was said that had the railroads been built predominantly from north to south the Union would have been preserved. With the idea of maintaining union between the East and the Pacific Territories fixed well in the minds of the people of that day, choice of the name Union Pacific for the first transcontinental railroad was a natural.

Lake and 690 miles east of Sacramento. The Union Pacific constructed 1086 miles of the route, traversing the full lengths east and west of Nebraska and Wyoming and part of Utah. Under the Acts of Congress, completion of the railroad was to be reached "before the first day of July, 1875"; it was actually accomplished six years earlier, through the energy of the builders.

Competition between the construction gangs of the two railroads became keen as the work neared its end. On one occasion (October 19, 1868, just east of Granger, Wyo.) the Union Pacific forces laid 7½ miles of track in one day, which they thought a record the other company could not equal; but on April 28, 1869, when the Central men had only 14 miles of easy work left before reaching the meeting point at Promontory, they, by almost superhuman effort, laid 10 miles of track between dawn and dark. Thus the line from the west reached Promontory on April 30; the Union Pacific track layers were impeded by their grading and bridge-building forces and at the end had to wait a week, until a cutting through a stretch of rock was completed, before laying the last five miles. So delayed, the rails from the east reached Promontory on Saturday, May 8; a gap of a few rail lengths between the Central and Union tracks was left for the final and ceremonial joining of the rails on Monday.

Central Pacific officials and prominent men of the Far West had already arrived at Promontory on the sixth, bringing with them a tie of California laurel, highly polished and bearing a silver plate on which was engraved "The last tie laid on the completion of the Pacific railroad, May, 1869." It was the gift of West Evens, who had supplied the company with the ties used in building its line. A "beautiful and valuable" golden spike, in size and shape like the common spikes used for fastening rails to the underlying ties, was also carried on the train, and with it a silver hammer, 3½ pounds in weight, for the driving of the golden spike. The hammer was provided by the Pacific Union Express Company, which did an express business on the Central Pacific Railroad.

The gold spike, which was given by David Hewes (afterward the donor to the State of Oregon of the first locomotive used in that state, now on a pedestal at the Portland Union Station) was manufactured at the metal-working establishment of W. T. Garratt in San Francisco out of 18 $20 gold pieces coined at the United States Mint in that city, which were melted down and poured into a mold. The finishing and engraving were done by Shulz, Fisher & Mokling of San Francisco. As delivered, there was attached to the point of the spike a nugget of about the same length as the spike, six inches, which was designed to be broken off during the ceremonies at Promontory and used in the manufacture of souvenirs of the occasion. It was made into rings, miniature track spikes, rails, and hammers which were widely distributed.

The spike bore on one side the inscription, "May God continue the unity of our country as this railroad unites the two great oceans of the world"; on another, "The last spike," followed by a list of the principal officers of the Central Pacific, and the words, "Presented by David Hewes, San Francisco." A third side of the spike was engraved with the names of the Central's directors, and the fourth bore this

Construction train timetable.

Before enough track had been completed to open even a portion of the line to revenue service, the UP issued its first timetable, for construction trains. In lieu of dispatching, meets of opposing trains were governed by special rules. Notice that train numbering does not follow the present practice of odd numbers for one direction and even for the other direction.

Union Pacific.

UNION PACIFIC RAIL ROAD.

TIME TABLE

For Construction Trains,

TO TAKE EFFECT

MONDAY, JUNE 11TH, 12 O'CLOCK NOON.

STATIONS.	Going West.		Going East	
	TRAIN No. 1.	TRAIN No. 2.	TRAIN No. 3.	TRAIN No. 4.
OMAHA,	12.00 M.	6.00 P. M.	8.15 P. M.	4.30 A. M.
PAPILLION,	1.30 P. M.	**7.20** "	**7.20** "	3.30 "
ELKHORN,	3.00 "	9.00 "	6.00 "	2.15 "
FREMONT,	**4.30** "	10.30 "	**4.30** "	12.50 "
NORTH BEND,	5.45 "	**11.40** "	3.00 "	**11.40** P. M.
SHELL CREEK,	6.50 "	12.50 A. M.	1.40 "	9.50 "
COLUMBUS,	8.00 "	2.00 "	12.00 M.	8.00 "

THE FULL-FACED FIGURES DENOTE MEETING PLACES.

RULES & REGULATIONS:

1. The Clock in the Cashier's Office at Omaha will be the standard time, and Conductors will regulate their time pieces by it.
2. Trains going West will have the right to Track for one hour behind time. If not then at meeting point, Trains going East will proceed, keeping one hour behind card time until meeting Westward bound Train.
3. At meeting points Conductors will allow five minutes for variation of time if Trains due have not arrived.
4. Trains going East will Side Track at meeting points.
5. Trains will leave Omaha and Columbus on time whether Trains due have arrived or not.

Sam'l B. Reed,
General Superintendent.

OMAHA, JUNE 9th, 1868.

Union Pacific.

1869 To get through, even with curves and grades, was an achievement.

inscription: "The Central Pacific railroad. Ground broken January 8, 1863; completed May ——, 1869."

Coursing westward to join the party at Promontory were Union Pacific Vice-President Thomas C. Durant and directors Sidney Dillon and John Duff, also the Rev. Dr. John Todd of Pittsfield, Mass., and other invited guests. When, on Thursday, the special train reached Piedmont, an insignificant siding near the Wyoming-Utah boundary, its progress was halted by a party of discharged and unpaid workmen who demanded their wages and would not allow the group to proceed until the money was paid them. It was not until Saturday that the demand was met and the train was released. In order to hurry construction as much as possible, expenditures were incurred which for the time overtaxed the resources both of the company and its contractors.

Monday morning came, and within the space of three or four hours two trains came into Promontory from each direction. Interest of course centered in the official trains, President Leland Stanford's, drawn by Central Pacific locomotive 60 (named *Jupiter*), and Durant's, to which was attached Union Pacific engine 119, without a name according to that company's practice. The *Jupiter*, burning wood for fuel, had an enormous smoke stack which gave it a much more impressive appearance than the 119, a coal-burner with a very ordinary-looking smokestack. Prominent among the assembled throng were four companies of soldiers from the 21st Infantry, U. S. A., brought from Camp Douglas, Salt Lake City, and dressed in the blue uniforms of the period. A band from Ogden gave forth music for the occasion in appropriate strains. Substantial delegations had come from the comparatively near towns of Salt Lake City and Ogden, including among their number Bishop John Sharp of the Latter Day Saints or Mormons, but, disappointingly, not Brigham Young, who was in

Union Pacific.

1942 Straightened, smoothed, and double tracked.

southern Utah at the time. The governor of Arizona and the chief justice of California had accompanied the Central Pacific president to Promontory; the chief engineers of the Central (S. S. Montague) and the Union Pacific (Gen. G. M. Dodge) were already there, as were the men who had supervised the actual construction of the railroads: the Casement brothers and Samuel B. Reed for the Union Pacific, and J. H. Strobridge for the Central. Present also were newspaper men from a number of cities and photographer Charles R. Savage from Salt Lake City. In all there appear to have been from 1200 to 1500 spectators on this day of Promontory's glory.

Telegraph lines had been extended to Promontory from both directions along the railroad, and the whole country awaited the news that the Central and Union Pacific rails were formally joined. It had been announced that the ceremonies would begin at noon, local time, and as that hour drew near the short strip of unoccupied roadbed between the ends of the rails was prepared for the ties which were now put in place, except for the official "last tie"; the rails, except for a 28-foot opening for the last two, were laid, joined together and spiked to the ties.

From the Central Pacific's official train the two superintendents of construction, Strobridge of the Central and Reed of the Union, now brought the Evens laurel tie and put it in position. Union Pacific white laborers handling one iron rail, and Central Pacific Chinese the other, followed, and the union of the two lines was complete except for the driving of the spikes for both rails into the last tie.

Introduced by Edgar Mills, the toastmaster of the occasion, Dr. Todd now invoked the divine blessing as the telegraph ticked out, for the benefit of waiting throngs in America's principal cities, "Almost ready. Hats off; prayer is being offered." Short speeches followed, in which President Stanford and Chief Engineer Dodge took part. Dr. Harkness of Sacramento formally presented the Hewes, or official, "last spike" to Stanford, and Government Commissioner Trittle, with a few appropriate words, placed in Durant's hands a silver spike from the State of Nevada. A second gold spike from the State of California, and one in which were combined gold, silver and iron, Arizona's gift, were brought out. The Pacific Union Express Company's gift of a silver maul was handed to Stanford by Voe, that company's representative at the scene.

A wire leading to the telegraph line was attached to the official gold spike, from which the large nugget had just been removed. The telegraph operator dispatched this message broadcast:

"To everybody: Keep quiet. When the last spike is driven at Promontory Point we will say, 'Done.' Don't break the circuit, but watch for the signals of the blows of the hammer. The spike will soon be driven. The signal will be three dots for the commencement of the blows."

The three other spikes were first put in place in the holes prepared for them and driven home by notables among the visitors. Stanford followed with the first hammer blow upon the gold spike in its prepared socket, and Durant gave the second. It is recorded that neither of the officials succeeded in hitting the spike on first attempt, but struck the rail instead. The two chief engineers between them finished the driving of the official spike,

Along the old Central Pacific. On January 8, 1863, when the first earth was being turned for the CP, the piles for this old wood truss bridge over the American River at Sacramento were just being driven. It was washed out by high water in 1868 and rebuilt. Locomotive on right-hand approach is the *C. P. Huntington*. Second photo is the original Dry Creek Trestle near Sacramento,

and the obliging telegraph signaled "Done." It was 2:47 p. m. in Washington, D. C.

Now followed a formal message:

> Promontory Summit, May 10, 12 m. To the Associated Press, east and west: The last rail is laid, the last spike is driven; the Pacific railroad is completed. The point of junction is 1086 miles west of the Missouri River and 690 miles east of Sacramento.
>
> Leland Stanford
> Central Pacific Railroad.
> T. C. Durant
> Sidney Dillon
> John Duff
> Union Pacific Railroad.

The two locomotives, now uncoupled from their trains, advanced to meet one another, pilot to pilot, the one from the west and the other from the east; and the enginemen gave a finishing touch to the scene by each breaking a bottle of champagne on the other's pilot. Backing away, the 119 and the *Jupiter* were again attached to their trains and in turn drew them across the point of junction.

The ceremonies over, officials and invited guests adjourned to the Durant Union Pacific car to receive the first of the many congratulatory telegrams that poured in. Afterward they adjourned to the Stanford Central Pacific car where a splendid meal accompanied by champagne was spread, and there was more speechmaking. Before darkness approached all the trains had departed with their human freight whence they came.

The last tie and the last spikes were too precious to be left for souvenir seekers, and they were withdrawn at once and replaced by ordinary stock, but *that* did not hinder the more enthusiastic of the visitors, for the second tie was immediately attacked with pocket knives and other weapons and cut into small pieces which were carried off as treasures. Two more ties laid in the same spot had the same fate, and it was reported that even pieces of cord wood were cut up at Promontory afterward and sold as souvenir fragments of the "last tie."

The laurel tie used in the celebration was sent to Sacramento, where it remained for many years, but was transferred to the Southern Pacific Company general office just in time to be destroyed in the great San Francisco fire of April, 1906. The Hewes gold spike, however, is still preserved at San Francisco, carefully guarded against loss.

The first United States mail to be carried overland entirely by train reached San Francisco on the evening of May 11. Including letters postmarked in New York May 3 and London April 20, it must have passed through Promontory at the time of the celebration, and was doubtless carried on the Durant train to that place and on the Stanford train from there to Sacramento.

Regularly scheduled passenger and freight trains were commenced immediately, providing service that involved passengers in a

Oakland Long Wharf.
Early in 1871 trains started to use the two-mile Long Wharf in Oakland, replaced for passenger service in 1882 by the present Mole.

A. C. Kaimbach collection.

All old Central Pacific photos, unless otherwise accredited, from collection of D. L. Joslyn, 2164 Castro Way, Sacramento, Calif.

and the third photo shows construction of the original trestle at Newcastle. This was later filled in with solid embankment. The other two photos show grading in the Sierras, the last view being at famous Cape Horn.

change of trains, and at first a wait of several hours, at Promontory. On December 6, 1869, by agreement, Ogden, 52 miles nearer to Omaha, became the transfer station between the two companies, and Promontory was shorn of its importance and most of its population. Increasing passenger traffic later brought about through train service without change of cars between Chicago and San Francisco.

THUS was born the Overland Route of the Union Pacific and Southern Pacific, but it was not the first use of this natural thoroughfare for travel to the West. The name Overland was acquired in 1849 when the Overland Route to the California gold fields was in strong contrast with the sea route around Cape Horn, or the shorter sea route via the Isthmus of Panama portage.

The Oregon Trail (its early name) is one of the most remarkable natural highways known to history. No engineer charted its course, determined its grades and curves, marked its fords, built bridges, or surveyed its mountain passes. Selected originally by the instinct that guides wild animals in their choice of easy grades, it developed naturally from a trappers' pathway into an emigrant road, and later into a trade route. Father DeSmet, the Belgian priest, traversed it in 1851 and pronounced it, although unimproved by man, one of the finest highways in the world.

The Overland Trail was more than 2000 miles in length. In the early days of its use, beginning about 1820, its starting point was St. Louis; then Franklin, Mo., Independence, Mo., and Kansas City. It was a river route, following the Kansas, the Big Blue, the Little

Old Central Pacific photographs.

This story of the old Central Pacific photos is told by D. L. Joslyn, who among other things specializes in old locomotive photographs and takes fine photos of modern power for Southern Pacific:

In 1863 there arrived in Sacramento a young man who had gone West to find a fortune in digging for gold. Like a great many more, he did not find the gold so easy to get, and the life of a miner did not appeal to him, so he went to "Sacramento City," as it was then called. He fell in with an artist who was making the then-popular Daguerreotypes, and, as he had some knowledge of this before leaving Boston for the gold fields, he went right to work for this artist.

Among some of their assignments was an order from Leland Stanford to take a few pictures of the work then in progress on the Central Pacific. This gave the young man an idea, and he took the first overland stage for the East, bought himself a full outfit for making "artistic" pictures, and hurried back to Sacramento. As soon as possible, he opened his own "picture gallery" at 47 J Street, where he made pictures until some time in 1904, when he passed away.

Shortly after his arrival back in Sacramento with his artist's outfit, Stanford gave him a commission to go out along the line, to follow the graders, bridge builders, track layers and so forth, and make a permanent record of all the work that was being done. In addition, whenever an inspection train went out, Artist Alfred Hart, with his wet plate outfit, his stereo camera and his assistants, was on the train. Stops were made along the line in order that he might make the necessary pictures.

Then came the time when his health failed. He had to go away for a while and he trusted his business to his assistant. The assistant had a bright idea. He bundled up all the negatives, took passage for the East via a tramp steamer. The steamer was sunk in rounding Cape Horn, and Hart lost all his negatives. Fortunately, there were many of his pictures circulating, and he gathered in what he could and made copies.

In 1918, I became interested in those old stereos; they were for sale at a song in the second-hand book stores. I bought about 400 of them, and made copies of those that intrigued me. The originals I sold to a man who was collecting such things, never dreaming that I was selling a priceless collection of old pictures.

Cisco in 1868.
Although it was April, 1868, before the Central Pacific crossed the summit of the Sierras, trains were running to Cisco, 12 miles west of the summit, as early as October, 1866. The Ten-Wheeler *Idaho* is shown (right) leaving the Cisco engine house before coupling to the down train for Sacramento some time in 1868. Central Pacific ran through a portion of California which was comparatively built up and the railroad lost no time in starting revenue service over the completed portions of the line.

Blue, the Platte, the Sweetwater, the Big Sandy, the Green, the Bear, the Snake, the Boise, the Grande Ronde, the Umatilla, and the Columbia; near the western boundary of Wyoming the California trail branched away. The first wagons used on a considerable part of the trail were those of Milton Sublette, of the Rocky Mountain Fur Company, which left St. Louis in 1830. The northern branches of the great pathway began to be traveled about 1840, when connections were established from Leavenworth, St. Joseph, Nebraska City, Plattsmouth, and Omaha. As traffic increased, shortcuts were discovered and used, and thus minor changes and parallel lines of passage were created. Travel increased gradually from year to year, due largely to the lure of the Oregon country and to the Mormon colonists in the Salt Lake Valley—but it received a real impetus just after the United States acquired California, when, on January 24, 1848, while building a sawmill for John Sutter on the South Fork of the American River near Coloma, Calif., James Marshall picked up from the mill race a shapeless rusty yellow mass not much larger than a lima bean. Interested by its color and weight, he took the specimen to Sutter's Fort at Sacramento for analysis. It was gold, worth nearly five dollars! A few days later Sam Brannan of the Sutter colony rode into the tiny settlement of San Francisco holding aloft a bottle of gold dust and shouting "Gold! Gold! Gold from the Rio Americano!"

The cry echoed 'round the world. It drew to California thousands of goldseekers. From every walk of life they came, from every state in the Union, and from nearly every country on the globe. By every imaginable route men hurried to the gold fields—by ship around the "Horn," to Panama and across, by ox cart and horseback over the Western mountains and deserts. It was a hazardous journey at best, and many never arrived at all—but still the tide of adventurous humanity flowed Californiaward. Some deserted the beaten paths and were lost; others found shortcuts. The Forty-Niners furnished their own transportation, which usually consisted of several yokes of oxen, or teams of horses, and a Conestoga wagon. They traveled in trains of 20 or more wagons each for mutual safety and protection against hostile Indians. From four to six months' time was required for the trip.

In 1860 the volume of traffic had grown to immense proportions; 500 freight wagons frequently passed Fort Kearney in a day, and 888 westbound wagons drawn by 10,600 oxen were counted between that post and Julesburg (not quite 200 miles) within 24 hours. One transportation company alone employed 75,000 oxen. These ox-wagon trains consumed an entire Summer in making a round trip to Fort Hall or Salt Lake City.

It was considered a great step forward in Western transportation when, in 1861, Ben Holladay established the Overland Stage Line. His outfit consisted of 100 Concord

Over the top. The railroad builders quickly found out that the 20-foot snows of the Sierras couldn't be kept from the tracks except by snow sheds like the original structures (above) near Summit. Now most of the sheds are gone, as modern rotary snowplows take care of heavy snow in more efficient manner. The summit tunnel was bored even while tracklaying went on beyond it in the Truckee Canyon in Nevada, using materials hauled over the top. Below is the grade and a tunnel entrance in the Sierras with Donner Lake in the distance. Bottom, Truckee River Canyon in 1868.

coaches and 2700 horses and mules. The journey of 1900 miles required 18 days at breakneck speed and cost the passenger $225, with safe arrival none too certain.

The demand for quicker time, particularly for the mails, led to the organization of the Pony Express, which carried letters to California in 10 days. Eighty expert riders and 500 fast ponies were continuously engaged; the daring mail carriers rode light, bearing only mail pouch, bowie knife, and revolver, and the mails traveled 250 miles a day. Although subject to frequent Indian attacks, the riders lost only one bag of mail during the entire history of the service.

THE story of the building of the Union Pacific has been told scores of times. Every schoolboy has thrilled to it. Ties, steel rail, equipment and other materials for the Union Pacific had to be shipped up the Missouri River to Omaha or hauled across Iowa in wagons. Materials for the Central Pacific were all shipped around Cape Horn by sea. Financing the construction, even with liberal government aid, was a serious problem because few believed that the road would ever be finished, knowing of the difficulties of penetrating what Daniel Webster termed "The Great Stony Mountains," and fewer still believed that the road would ever pay.

The Indians were the most colorful obstacle

to the completion of the railroad. The early fur traders had been friends of the Indians, but not so the railroad. It brought farmers, and the farmer's plow was the mortal enemy of the buffalo, which, grazing in countless millions over the Western prairies, meant abundant food, clothing and shelter to the Indians. All these born fighters needed was the threat from their medicine men, "When buffalo plowed under, Indian starve!"

Between Fort Kearney, Neb., and Bitter Creek, Wyo., encounters were most frequent and sanguinary. At Lexington, formerly called Plum Creek, numerous raids occurred during the construction of the Union Pacific. In one of these a freight train and crew were captured but promptly retaken by the railroad forces. In 1867 a band of Cheyennes wrecked a train, killed the engineer and fireman, plundered the cars, and rode off with bolts of bright cloth tied to their horses' tails. Maj. North and a company of Pawnees which he had recruited overtook the marauders, killed 15 and captured the nephew of the leader. Near Ogalalla a band of Indians attempted to wreck a train by driving their ponies in front of it. Twenty ponies were killed. At Sidney, Indian attacks were common and several section hands were killed by arrows. At Hillsdale a Union Pacific surveyor became a victim. Several attacks were made at Cheyenne, and local tradition has it that the first two burials in that metropolis were Union Pacific graders killed by Cheyenne Indians.

Finally Generals Sherman and Sheridan were sent out to mend the manners of these war-whooping iconoclasts, and the right of eminent domain eventually prevailed. While attacks continued sporadically all through the construction of the Union Pacific and for some years after the road was in full operation, the Indians were gradually subdued in battle and mollified in diplomatic pow-wows, and serious warfare diminished to the vanishing point. Some of the old die-hard chiefs of the tribes were given passes permitting them to ride free, and it wasn't long before the passless young pagans learned to hop freights and "ride the rods" just as skillfully as Christians.

The details of this oft-told tale of epic railroad construction are not for here. The railroads from East and West met, the golden spike was driven and the United States was united from Atlantic to Pacific. The Overland Route of the covered wagon had been made permanent, a bond of union.

The Western trains bulged with emigrants heading for the promised land, farms carved out of the railroad land grants. But land agents were not only busy in Europe; people from the Central and Eastern states flocked westward and Horace Greeley's "Go West, young man, go West" urged them on. In addition to the new settlers and in addition to the growing commercial traffic the Overland Route carried hundreds of sightseers from all parts of the world, and it

In the Nevada desert.
The Nevada desert is not all a flat expanse of sand, but once the Central Pacific had crossed the Sierras the construction crews

rapidly became a world-renowned scenic attraction.

"What a contrast does today furnish!" says an 1880 travel book after telling of the early covered wagon trains across the Western plains and the mountains. "The luxurious traveler is whirled along at 30 miles an hour in richly furnished palace coaches and he has hardly time to fairly enjoy the passing glances of the magnificent scenery when he finds himself in the metropolis of the Pacific Coast.

"Omaha, at which point we start on our long journey, is a prosperous city of more than 20,000 population, an increase of 75 per cent in 10 years. It is on the western side of the Missouri River, which is spanned by a bridge 2750 feet long, and its principal industries are in breweries, distilleries, brickyards, smelting and refining works. The Union Pacific depot is a handsome structure that was built a few years ago. It contains every convenience for the traveler, including waiting-rooms, restaurants, a money-exchange, and ticket offices. The scene of the departure and arrival of the transcontinental train is of the liveliest kind. There is a mingling of many races and many costumes. Sleeping-car porters and conductors, brakemen, news agents, railway police, emigrants, soldiers, plainsmen, fashionable tourists, commercial travelers, and occasional Indians, give spice and

"Transcontinental."

In United States railroad parlance a transcontinental railroad is one crossing the Western part of the country only, and is not literally an ocean-to-ocean road. Perhaps that is because there never has been a real transcontinental railroad in this land. The imagination is stimulated by the ocean-to-ocean projects that almost became reality: the Gould plan in the early 1900's and the more recent Van Sweringen system. Little known indeed is the 1884 proposal of Collis P. Huntington, who was one of the big four who built the Central Pacific and later founded the Southern Pacific to build other lines in California and Oregon and to build east to New Orleans. Huntington had acquired control of the Chesapeake & Ohio in 1869 and had expanded the system into a major trunk line. In 1884, at a New York board meeting, he proposed to his California associates that the Southern Pacific acquire the C&O and create a single railroad from the Atlantic to the Pacific. The suggestion was turned down.

made short work of Nevada and Utah. At extreme left is a construction train at end of track in the desert; next photo shows water cars at Winnemucca, Nev.; the next is the construction camp at the end of day with tents for the Chinese. The last photo shows end of track in a flat stretch on the desert.

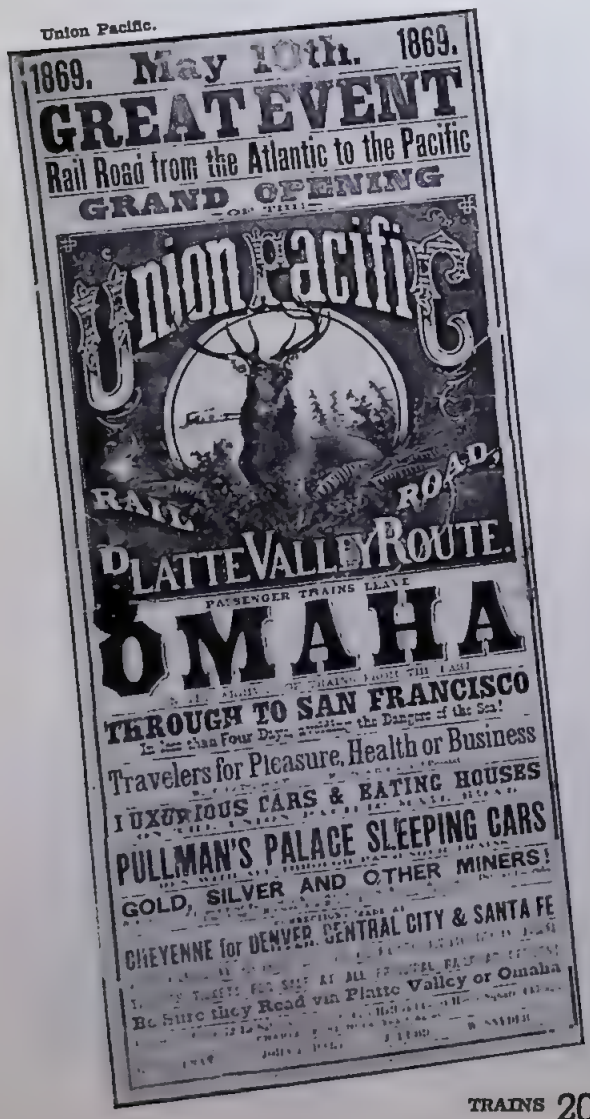
variety to the throng, and townspeople crowd in to share the excitement. But the consequences of the confusion are helped by the admirable system for the rechecking of baggage, etc., and the intelligence of the railway attendants.

"The verdant farm-lands are soon succeeded, however, by the plains, the monotony of which is excessive. Occasionally the land seems to sink into a basin surrounded by hogsheads, a form of rock with presents a steep and rough escarpment on one side, and on the other slopes off by easy graduations to the level. But there is no great elevation, and the spectator rather gets the idea of contraction than of immensity. At intervals of 20 or 30 miles a red tank with a creaking windmill marks a water station, at which the passengers alight to gather prairie flowers; and still farther apart some little white towns, with names reminiscent of frontier life, tell a story to which the copper-skinned, dirty mendicants, crowding the stations, are a fitting pendant. In some places wagon trains of emigrants may even yet be seen toiling along in their dusty route not far from the track, though now under conditions of far less peril than of yore.

"Between Omaha and Cheyenne we are carried through 68 stations which have but little to recommend them to the notice of the traveler. Nearly all these stopping places have the same characteristics. They have been of rapid growth, and vary in population from several thousands to a score or less. Between them the plains rise and fall monotonously, keeping the traveler's interest only half awake by prairie-dog villages and herds of antelope. The train passes under snow sheds and between snow fences, and presently stops at Cheyenne, where the Denver Branch of the Kansas Pacific Railway connects with the Union Pacific, affording tourists a chance to visit every noted place in Colorado.

"After leaving Cheyenne the snow fences and snow sheds become more frequent, indicating how terrible the Winter storms are. A plaintive look of fear may be seen on the faces of the immigrants in the forward cars, and an occasional mutter is heard. A stock raiser points out an ominous little valley in which several thousand sheep were frozen to death in one night, and a scattering of bleached bones confirms his story. Here we cross a shallow canyon, and the track is hedged on both sides by a fence. The wind blows with such fury in Winter that it lifts the snow up out of this ravine and over the bridge on which the railway is carried. Bleak and profitless hills of loose sand, strewed with boulders and ribbed with buttresses of weathered granite, limit the prospect; and the high peaks of Colorado, which were visible as we approached Cheyenne, are hidden by the intermediate ridges. But in the neighborhood of Sherman Summit, 33 miles from Cheyenne, these superb mountains reappear, stretching a hundred miles or more to the southward, bathed in white vapor near the summits, profoundly blue as they slope down to the foothills, checkered with broad streaks

Early poster.



of light, dazzling snowfields, and spreading shadows. . . .

"The great Laramie Plains, which we are about to cross, are some 40 miles wide and 100 miles long, between the Black Hills [now called Laramie Mountains] and Medicine Bow Mountains. They furnish the best grazing in the United States, and they are overrun by enormous flocks of sheep, who find here the most fattening grasses. Sheep herding is the big industry of this region, and some large fortunes have been made by ranchmen of the Laramie Plains. We find the immigrant trail following the railway closely through this part of the route. Canvas-covered wagons drawn by ox teams are often passed, sometimes alone, sometimes in a train. The whole establishment of a migrating family—men, women, and children, furniture, cattle, and pets—is included in the caravan; and in the evening it is not uncommon to see the wanderers drawn up by the side of a spring or brook for the night—the women busy over the camp fire and the men attending to the cattle or smoking under the shelter of the wagons.

"Soon after passing Laramie, and while we are still rolling over the fertile plains, the night sweeps up from the East in a smoky-looking cloud and overtakes the speeding train; but, before the relapse of light into final darkness, there is the brief glory of the Western sunset, with its splendors of crimson and gold, its dying gleams of opal light, and peaceful blues and grays. The clattering train does not break the spell of silence and loneliness that settles with twilight on the land, though it suggests civilization and the fast-beating pulse of commerce; on the contrary, it adds weirdness to the scene as it twists among the hillocks, disappearing under a snow shed for a minute, and reappearing with a roar and a blaze. It is like a ship adrift at sea: Whence it has come is only indicated by the clogging wreath of smoke that hangs low upon the earth behind it, and its destination is unforeshadowed by the gleam of a human habitation in the dusk ahead. At this time the work of the railway company in projecting an iron pathway into so wild and desolate a region impresses us as it has not impressed us before.

"Beyond the yellow and gray folds of the nearer land, among which strange-looking masses of rock occasionally loom up, the

A. C. Kalmbach collection.

UP depot, Omaha, in 1868.

Union Pacific construction train, 1868.

Union Pacific.

Uintah Mountains, extending eastward and southeastward from Utah, now arise, and bound the prospect with a line of deep, dark blue. They are visible for hours; sometimes, when the train rolls over a high crest, they are revealed from their purple bases to their snowy summits, and then, as it descends into the hollow, they are hidden in all save the highest tips.

"Near by this region begin the so-called 'Bad Lands' on the old overland stage-road 10 miles to the south. The modern road of iron rail touches this old route from time to time in its winding course; but the glory of the days when the Pony Express, the fast coaches, and the hundreds of immigrant trains passing every day raised the dust in choking clouds, has only a remainder in the tottering telegraph poles out of use and unstrung, and the deserted ranches, which once furnished rest and refreshment. . . .

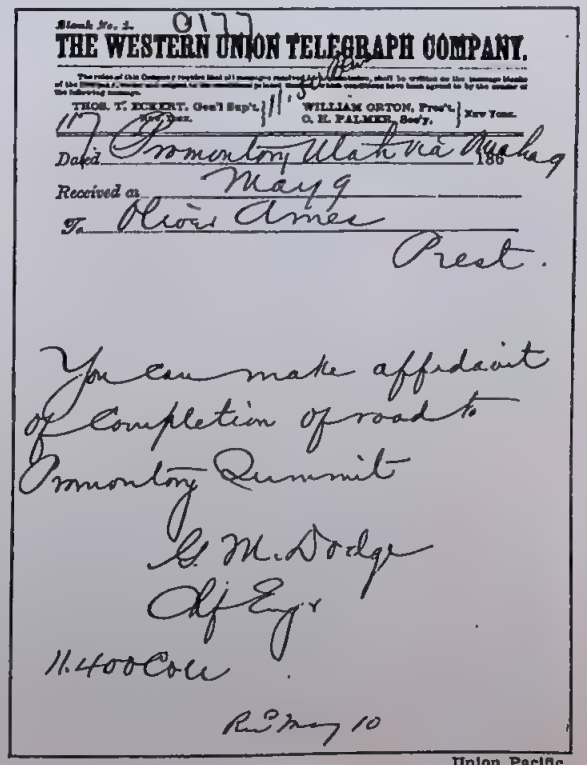
"The various industries which have sprung up along the Union and Central Pacific railways and their branches in the last 10 years —mostly, it is true, connected with the mining interest—are quite marvelous, and perhaps excite one's sense of wonder even more than the evidences of enterprise in the more settled regions of the country. The contrast between the bleakness and savagery of the adjacent region and the mills, workshops, etc., which spring so rapidly around many a railway station, or plant themselves so sturdily in some remote region of the mineral-bearing hills, strikes the fancy with great force. Ten or 20 years ago a desert of arid plains or steep and inaccessible mountains, now paying tribute to the luxuries and needs of mankind by yielding freely to his hand; then a lair of wild animals and a hunting ground for the painted savage, now a firmly settled outpost of civilization. The pluck and push of the American people have shown themselves in great works for a whole century, but at no time are they pictured more vividly than in the sights which unroll like a panorama before the traveler across the continent as he is hurried from ocean to ocean by the power of steam.

"The last station on the railway line within Wyoming is Evanston, a town of considerable importance, because in its vicinity are large and rich coal deposits, one mine alone giving an annual yield of 150,000 tons. At this station we are brought face to face with the problem of Chinese labor. The pigtailed Celestials work on the railway, tend at the bars and restaurants, do the cooking (and, needless to say, the washing), and altogether crowd out the labor of Ireland and Deutschland; but those who employ this labor seem to be perfectly well satisfied, and the hungry tourists who swarm into the railway eating-house certainly have no reason to complain of their treatment on the part of these smiling, polite, attentive, white-aproned Orientals.

"For four hours after entering Utah there is not a moment of lagging interest to the traveler as he passes the wonders of Echo, Weber, and Ogden canyons. . . . The descent into Echo canyon begins soon after dining at

"Our road is complete."

The day before the joining of the rails at Promontory, Gen. Grenville M. Dodge, chief engineer of the Union Pacific, sent this telegram to the president of his company. As far as the Union Pacific was concerned the railroad was complete. The Central Pacific had been completed to the same point some days before, and the actual linking of the two waited merely upon ceremony. The affidavit referred to was probably a legal technicality in connection with the government land grants and loans, based upon mileage completed.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THE WESTERN UNION TELEGRAPH COMPANY.

THOS. T. ECKERT, Gen'l Sup't. | WILLIAM ORTON, Pres't. | New York.
O. H. PALMER, Sec'y.

Dated Promontory Utah via Omaha May 9 1869

Received at

To Oliver Ames
Prest.

You can make affidavit of completion of road to Promontory Summit

G. M. Dodge
Chf Eng.

11.400 Coll

Rec'd May 10

Union Pacific.

Southern Pacific.

The old and the new, 1869.

At Monument Point, Utah, just a few miles west of Promontory, the special Central Pacific train carrying president Leland Stanford and party east to the golden spike ceremony met a train of covered wagons carrying immigrants to California. The locomotive is the *Jupiter*, the same one shown in photos of the ceremonial May 10 scene. The train probably stopped especially to allow the photographer to record this change in transportation.

Evanston; the mountain air is inspiring; the afternoon light grows mellower, and all the conditions are favorable to our highest enjoyment.

"That most amusing of travelers, the Baron de Hübner, has described his impressions of this part of the overland journey as follows: 'The descent to the Salt Lake is done without steam, merely by the weight of the carriages; and, although the brake is put upon the wheels, you go down at a frightful pace, and, of course, the speed increases with the weight of the train; and, the train being composed of an immense number of cars and trucks, I became positively giddy before we got to the bottom. Add to this the curves, which are as sharp as they are numerous, and the fearful precipices on each side, and you will understand why most of the travelers turn pale.'

"The picture is overdrawn, and the impressions are those of a highly nervous person; but the real experience is sufficiently exciting as the train sweeps down and sways from side to side with increasing speed. . . .

"The length of the valley is quickly traversed, and in a few moments we pass through the Devil's Gate into Ogden Canyon, another giant chasm held in by rocks from 1000 to 2500 feet in height. Ogden Canyon emerges in Salt Lake Valley, and before long we change cars at Ogden, where the Union Pacific road ends and the Central Pacific begins, completing the first part of our journey. At this place two other railways also have their starting point: the Utah Central and the Utah Northern.

"Ogden, next to Salt Lake City, is the most important town in the Territory of Utah, its population being about 6000. It is built on a high plateau, with lofty mountains in the distance, and is a very good attempt at a city. The scene at the station on the arrival of the train is full of life and variety. Passengers flit hither and thither, promenading or looking after the transfer of their tickets and baggage; newsboys shriek out the New York papers; eager brokers, their hands full of coin, ply travelers with offers of exchange for currency; dining-room gongs are booming furiously, and hotel agents are soliciting custom. The moving throng is curious in its varieties of dress, manner, and language. But what gives the scene most interest is not the crowd, nor the variety of costume, but the situation—the grand, vivid hills on every side tinged with fiery light, the broken outlines of the peaks that are glowing with passionate heat, the mountain fields of perpetual snow, the green lowlands, and, above all, the shining sky which is changing color every

Map of the Lane Cutoff.

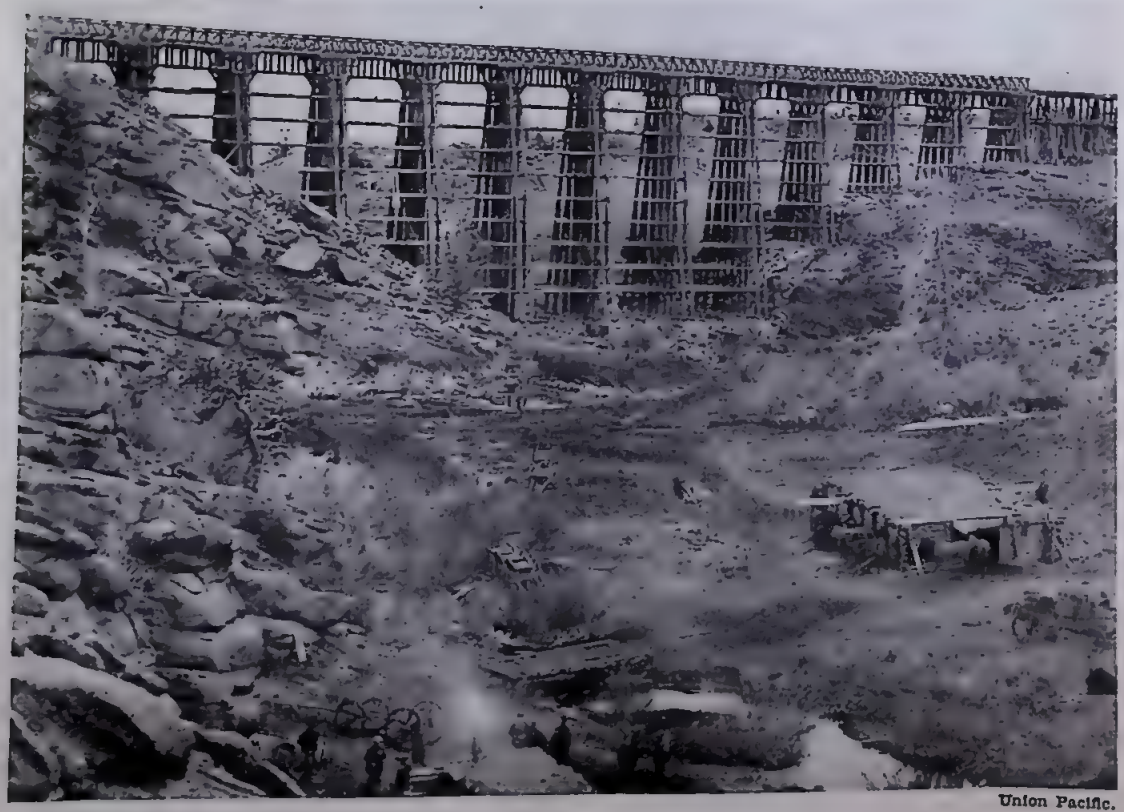
The first Union Pacific surveys located the route almost straight west from Omaha to the valley of the Platte River, but after $100,000 had been spent on this line, and after some two years of controversy, a change was made to the ox-bow or Mud Creek route, and the actual track laying was started along the circuitous route. It was not until the Harriman administration in the early twentieth century that the straighter route was built, as the tremendously expensive Lane Cutoff. It was not lack of engineering ability which handicapped the early railroad builders, but the desire to save on original cost even at the expense of more costly operation. Below is the Dale Creek bridge in 1869.

moment. There are few lovelier sights than Ogden in a Summer's sunset.

"For more than 130 miles we whirl by station after station, without seeing much of special interest, until we reach the boundary line which separates Utah from Nevada. The latter is, indeed, true to its name, the 'Desert State,' and the dreariest day of the seven occupied in the overland journey is spent in crossing it.

"Occasionally the train stops at an important mining town such as Elko, but certainly the tourist finds little to interest him at a passing glance, however important the industry represented by the place; and we are inclined to say, with the poet Dante, when, in his vision of the realms of despair, his guide took him through one most woeful place, 'Let us look and pass on with a shudder.' . . .

"We are now in the valley of the Truckee River, and approaching the end of the long journey over the continent. Less than 300 miles intervene between Reno, where tourists may diverge to have a look at Virginia City or Lake Tahoe, and the city of the Golden Horn, which is our goal. It will not do for us to miss Lake Tahoe, which, in some



Union Pacific.

respects, is one of the great wonders of the continent. A brief ride of 30 miles on the Virginia & Truckee Railway to Carson, and thence by stage to the lake, the highest navigable body of water in the world except Lake Titicaca in the Bolivian Andes, gives to the delighted eye a vision of great beauty.

"It is also worth while for us, on returning from Lake Tahoe, to take a brief trip to Virginia City, which by rail is 52 miles from Reno, though a bee-line is only 16 miles. So environed is Virginia City by massive mountains that the curves of the track necessary to compass a distance of only 16 miles as the bee flies describe a circle of 360 degrees seven times repeated, the cost of erection having been two million dollars. Virginia City has nearly half the population of the state, and is a place wonderful for its energy, its wickedness, its wealth, and brilliant show. Splendid dens of vice rise side by side with churches, banks, and fine private houses, and the devil is served with an open cheerfulness that knows no shame. Here are the famous mines of the Comstock Lode, known throughout the world for its enormous yield of the precious metals. The city is built across the face of the mountain, which rises 2000 feet above, and falls 2000 feet below it.

"West of Truckee the snow sheds become more frequent, and in one case they are continuous for 29 miles. They are of two kinds: with flat roofs built to hold the weight of 25 or 30 feet of snow, and with steep roofs designed to slide it down the mountain. In some cases the cost of building these protections from the storms of Winter was $30,000 a mile, so we get some idea of the vast amount of money which it took to complete the railroad connection across the continent.

"A point worthy of notice is called Emigrants' Gap, a trying passage in the days when the only vehicles that crossed the Sierras were the canvas-covered wagons of the pioneers and the parlor car was an undreamed-of luxury. The old emigrant road, which occasionally edges on the railway, is not wholly deserted yet. The capacious wagons, with their arched roofs of white canvas, loaded 10 feet high with furniture and stores, are now and then seen toiling along at a pitifully slow rate. . . .

"A few miles farther comes Giant's Gap, one of the grandest scenes on the road. A great chasm appears, worn by glaciers to a depth of 2000 feet and extending about a mile to the junction of the South Branch, the walls narrowing and become perpendicular, and the mountains enclosing it in denser clusters than ever. Two thousand feet below flow the quiet waters of the American River.

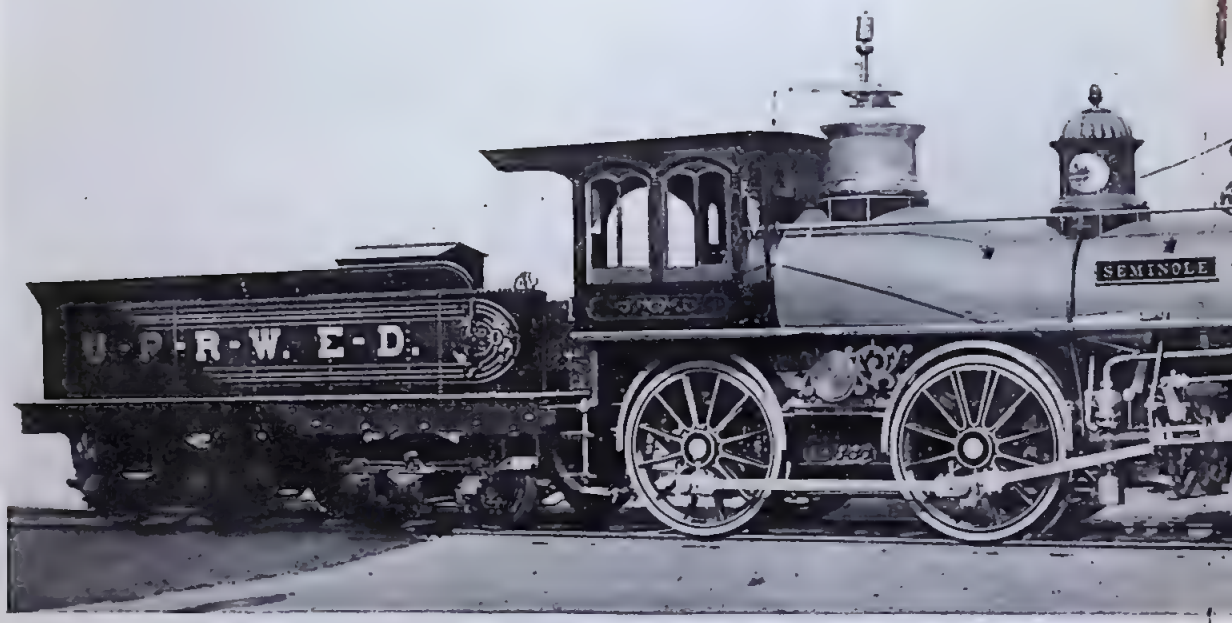
"As we speed along, watching with intent eye the succession of interesting objects on the route, a sudden excitement is evident in the car. Even the old traveler, who has gone over the route many times, wakes from his sleepy indifference. The train is approaching Cape Horn, one of the grandest efforts of Nature in a region of grandeur. The cape is a precipitous bluff rising to a height of over 2000 feet above the river level, and the ledge along which the railway is carried was so inaccessible that the first workmen had to be lowered from the top of the cliff by ropes. Standing by the river side we should see the rugged wall of rock reaching toward the sky; great boulders and a few twisted evergreens cling to the crumbling face of the huge, naked precipice; and the train, spinning along the frail ledge under the trail of its own smoke, would be dwarfed by the height above and below it to the likeness of size of a snake. . . .

"We may go from Sacramento to San Francisco by boat, but, as we have come through overland, we will finish the journey by rail. . . .

"We ultimately reach our terminus at Oakland and are transferred across the bay in luxurious ferry boats to the Market Street Wharf in San Francisco. From here transfer vehicles are ready to convey us in any direction."

In the early days of the overland railroad the one-way first class fare from the Atlantic to the Pacific Ocean was $173, the sleeper fare $28 more and meals in the dining stations about $24 extra. The trip took seven days and nights. Later the fare was reduced to $139, which made the one-way trip cost about $190. In contrast, today one can take the entire circle round trip from his home to one coast, across the entire country to the other coast, and back home again for less than $200 first class fare (exclusive of tax) including lower berth.

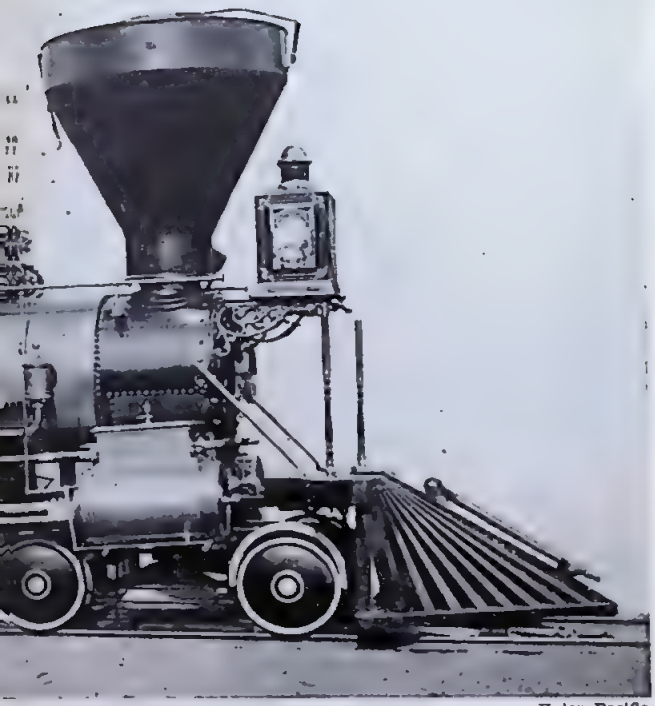
FOLLOWING the completion of the first transcontinental railroad came other routes, the Southern Pacific and the Atlantic



& Pacific (Santa Fe) to the south, the Northern Pacific to the north. The builders of the Central Pacific were aggressive and followed a continuous program of expansion. Over their Southern Pacific through route to the South was diverted much of the traffic on which income would otherwise had been split with Union Pacific. The Union Pacific itself was on the other hand badly managed and in 1893 went into receivership. It was at the close of this receivership in the last years of the nineteenth century that Edward Henry Harriman came into the picture. Harriman was already a power in the railroad world. It was he who had rebuilt the Chicago & Alton into a railroad worth its salt, and it was he who now proceeded to make the worn-out and antedated Union Pacific into an up-to-date, efficient transportation machine.

It was not that the early engineers had done a bad job. In fact, they did an excellent job of location, and it was all that Harriman's engineers could do to improve upon it. But the early railroad had been built lightly and with extremely low limits on the physical costs of construction. West of Omaha, where the old historic transcontinental had wound south and west around a series of undulating hills, the new Lane Cutoff was built straight through them, 20 miles of deep cuts and heavy fills. Across Wyoming, where the summit of the Union Pacific is in the Laramie Range rather than on the Continental Divide beyond, Harriman's engineers cut 237 feet off the crest with a tunnel under Sherman Summit. The grades through the entire Laramie Range and Rocky Mountain stretch were cut to a minimum; wooden trestles were swallowed up in embankments.

Nor was that all. Harriman felt that the Union Pacific and Central Pacific belonged together as one single Overland Route railroad under joint and efficient management. He tried to buy the Central Pacific from the Southern Pacific, which at that time owned and operated it. It couldn't be done, so he bought control of the Southern Pacific instead. Collis P. Huntington, the last of the big four who built the Southern Pacific, had died, and Harriman obtained his stock from the heirs and bought more on the open market. Now Harriman owned the world's largest railroad system.



Union Pacific.

A Rogers loco on the Kansas Pacific.

Only a few years after the construction of the original Union Pacific, the Union Pacific - Eastern Division, or Kansas Pacific, was being built west from Kansas City to Denver by a separate company. This was completed in 1870 and is now the Kansas City trunk of the Union Pacific. Gen. William J. Palmer of Denver & Rio Grande fame surveyed and engineered the road, and was primarily responsible for the financing and construction. This line furnished the first all-rail connection from the East into the trans-Missouri country. It had connections via St. Louis before the Chicago & North Western reached Council Bluffs in 1867 to connect with the Union Pacific. The Denver Pacific connected Denver with the UP line at Cheyenne in 1870 and this completed an optional transcontinental route through St. Louis, Kansas City and Denver. Buffalo Bill Cody worked for the Kansas Pacific and had the contract to supply meat for the construction crews. He got his nickname because he was so proficient at shooting buffalo, and in fact he killed 4280 buffalo in 18 months in the course of furnishing buffalo steaks for the railroad builders. In connection with the Kansas Pacific surveys Gen. Palmer also made the reconnaisance surveys of the more southerly routes now followed by the Santa Fe and the Southern Pacific, and became so enthusiastic about the potentialities of the Rocky Mountain country that he determined to build a north and south railroad along the east slope to feed the various transcontinental routes.

He proceeded with improvement programs on the old Central Pacific main line west of Ogden. The Lucin Cutoff was thrown straight across Great Salt Lake, 12.9 miles of it on trestle. The bottom was treacherous and unstable, and there were times when it seemed the fills and trestles would be swallowed up in the mud. The engineers came to Harriman and said it couldn't be done. "Impossible or not, go ahead and finish the job," said Harriman. It was finished. On March 8, 1904, Overland Route trains started to run over the lake, saving 44.8 miles of track, 3919 degrees of curvature and 1515 feet of vertical grades. In 1934 Southern Pacific asked to abandon the old line around the north end of the lake, the line which goes through Promontory, where the golden spike was driven. The War Department said, "No. In event of a war with a Pacific power the cutoff across the lake would be too susceptible to attack. The old line must be maintained as part of our national defense." And so it has been. The line was relocated far into Nevada. New locomotives were purchased, new rail laid, new ballast installed. In every way Harriman built the Union Pacific-Southern Pacific system into a great and an efficient railroad. He put 127 million dollars into reconstruction and re-equipment, another 114 million into extension, such as new railroad lines or branches either built or bought outright.

All this came to an end June 30, 1913. The United States had filed suit in 1908, charging that the Union Pacific-Southern Pacific combine was in violation of the Sherman anti-trust law and was illegal. The United States Supreme Court, on December 2, 1912, reversed a lower court and ordered the Union Pacific to divest itself of its control in the Southern Pacific company. Final arrangements were approved in 1913. Edward Henry Harriman had died in 1909 and thus passed the Harriman "United Lines"—but not that monument to it, the 1772 miles of absolutely first-class railroad that form the shortest route between Omaha and San Francisco.

Today the yellow, tan, and red streamliners streak over the Overland Route in little more than a day. Out on the Lucin Cutoff, with the sunset glow reflecting from the lake, the traveler isn't even aware of old Promontory Point to the north, or of its significance.

Train Trips

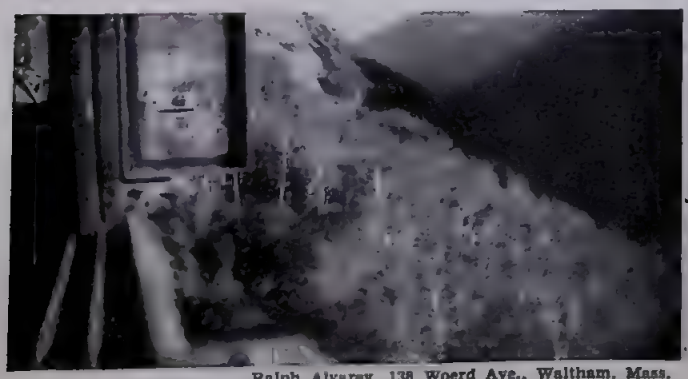
★ Nine ways to have the best vacation ever.

Planned by Harold M. Mayer.

1. New England

1007 miles, 3 days.

Like all nine of the suggested trips, the New England route is in the form of a closed circuit which can be started at any point, as at New York, Montreal, Portland or Boston, and followed around in either direction back to the starting point. Buy your complete ticket for the trip before leaving, as with the help of a passenger agent you will thus be able to take advantage of any savings in fare on account of diverse routing privileges. Scenic highlights of the New England trip are the New York-Montreal route up the Hudson River and past Lake Champlain, the Montreal-Portland route through Crawford Notch (see photo, below), where the Maine Central crosses the White Mountains of New Hampshire, and the trip down the New England Coast with the ocean often in view. An option is to use the New Haven via Hartford and Springfield instead of the Shore Line route through Providence. On the Maine Central portion of the trip a stopover at Fabyan is possible, with a side trip to the Mount Washington Cog Road [June 1941 TRAINS]. The New York corner of the trip is in busy Grand Central Terminal, now handling 40 million passengers a year.

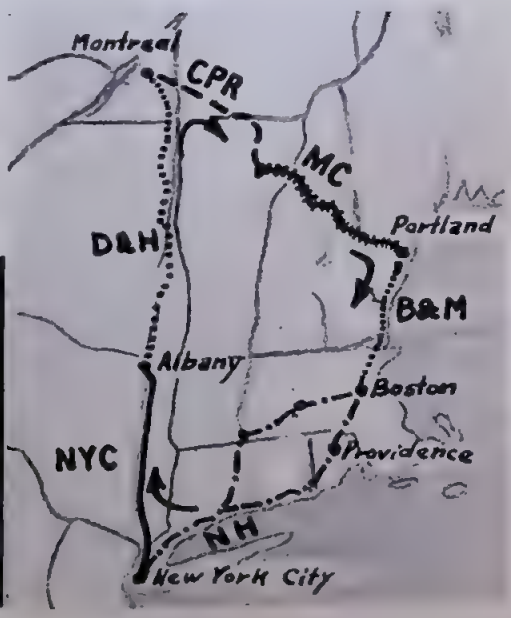


Ralph Alvarey, 138 Woerd Ave., Waltham, Mass.

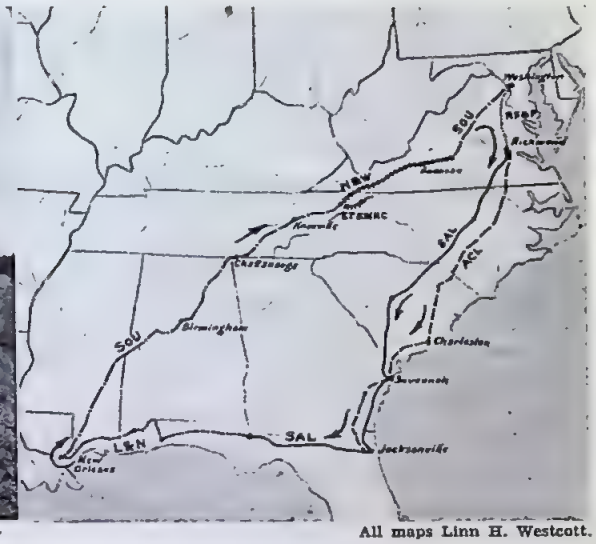
2. Southern States

2484 miles, 7 days.

The Great Smoky Mountains and the Alleghenies join with the Gulf and South Atlantic Coast in providing the scenic attraction for this trip. As with the other trips, the number of days of traveling time is based on daylight riding and does not include time for more than minimum stopovers. The trip can be made in less time by doing parts of it in sleeping cars, but it would be far more advisable to stretch it out to 10 or 14 days. New Orleans is a city utterly different from any other and should really be stayed in for a few days if at all possible. Birmingham, a heavy industrial city, offers enough to keep the visitor busy at least a day. From Jacksonville a 366-mile side trip can be made to Miami. Practically next door is St. Augustine, oldest city in America. West of Jacksonville, near Live Oak, the Seaboard Air Line crosses the Suwanee River, original of Stephen Foster's song. Charleston, S. C., is representative of the old aristocratic South, and Savannah of the more modern commercial South. Chattanooga is worth several days' stopover. Knoxville is the gateway to the Great Smokies. At Johnson City, Tenn., is one terminal of the East Tennessee & North Carolina narrow gauge, which runs passenger excursions every other Sunday during Summer months.



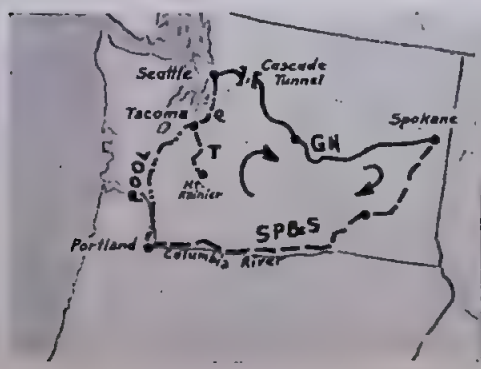
Donald W. Furler, 65 Glen Ave., Glen Rock, N. J.



All maps Linn H. Westcott.

3. Pacific Northwest 881 miles, 3 days.

The Great Northern's Cascade Tunnel and the Spokane, Portland & Seattle's line down the Columbia River get the spotlight on any railroad trip through or to the Pacific Northwest. Fine daylight trains with comfortable reserved-seat lounge cars (only 50 cents extra on coach tickets) operate over both these routes. All four principal cities on the circuit are well worth stopovers. At Seattle watch the *Olympian* arrive from the East at 8 o'clock in the morning behind a giant Milwaukee Road bi-polar electric locomotive and then after switching depart for Tacoma (photo below) with the observation car end of the train forward! Look around the busy water front, but be careful to stay on public streets and by all means don't take your camera; remember we're at war. From Tacoma, side-trip to Mount Rainier. From Portland ride the interurbans to Oregon City and Gresham. The Spokane railroad stations are busy morning and evening when the Northern Pacific, Milwaukee Road, and Great Northern transcontinental trains come through all at about the same time and make long stops. The Columbia River, cutting directly through the heart of the Cascade Mountains with a wide green gorge, is one of the grandest pieces of scenery in this country, and the SP&S is practically at the water's edge through an entire scenic afternoon. Look for Bonneville Dam and for the waterfalls across the river. The railroad on the south bank is Union Pacific.



Albert Farrow, 138 10th St., S., Auburn, Wash.

4. Middle East

1185 miles, 4 days.

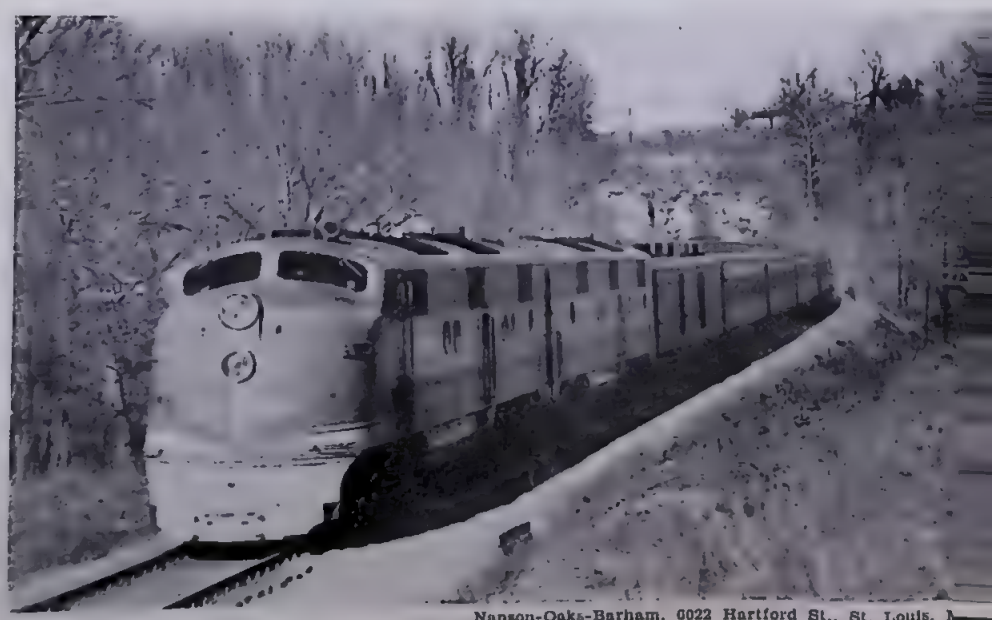
J. B. Rzschke, 690 8th Ave., New York, N. Y.

Through the heavily populated and industrialized heart of the Middle East runs the "Greatest Show on Earth" [January 1942 TRAINS], the electrified New York-Washington line of the Pennsylvania Railroad. Taking this or B&O as far as Baltimore, one can connect with the Western Maryland for an interesting daylight ride to Cumberland. The Western Maryland was fully described in the May 1941 TRAINS. Baltimore & Ohio from Cumberland, via Pittsburgh and Buffalo, is continuously heavy mountain country. The Pittsburgh-Buffalo line (the old Buffalo, Rochester & Pittsburgh) follows the high parts of the Allegheny Ridge and is constantly offering a wide scenic vista. The Delaware, Lackawanna & Western is another line following the high ridges and looking out across the green farm lands of southern New York. In the Pocona Mountains is the heavy construction work of a realinement built before the first World War and including the Tunkhannock viaduct (photo), largest reinforced concrete viaduct. Binghamton, with Erie and Delaware & Hudson in addition to the Lackawanna, is es-

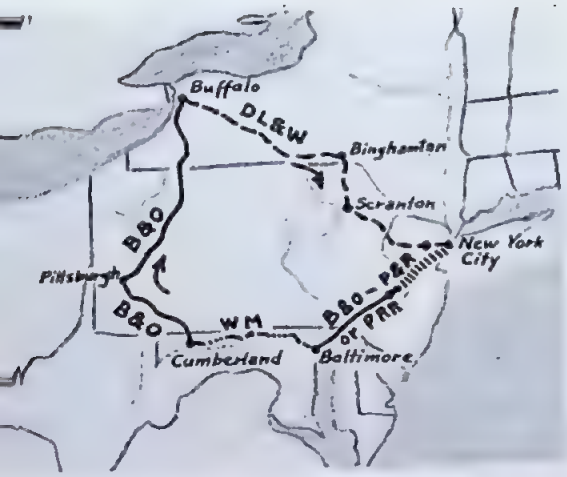
5. Middle West

1607 miles, 4 days.

The rolling green farmlands of the Middle West present an astonishing variety of scenery as well as some interesting railroads and railroad equipment. The suggested routing includes two electric lines typical of this section of the country, the North Shore Line between Milwaukee and Chicago and the Illinois Terminal [September 1941 TRAINS] between Peoria and St. Louis. The 161 miles between Chicago and Peoria is covered at good speed by the Rock Island Diesel streamlined *Rockets* and the track follows the broad Illinois River for many miles. The Missouri Pacific between St. Louis and Omaha is often in sight of the Missouri River, and the train service includes the Diesel streamlined *Missouri River Eagle*. Photo shows another Diesel power train on this route, *The Royal Gorge*, bound for the West. Standard steam trains cover the Omaha Road (Chicago, St. Paul, Minneapolis & Omaha) between Omaha and Twin Cities, and

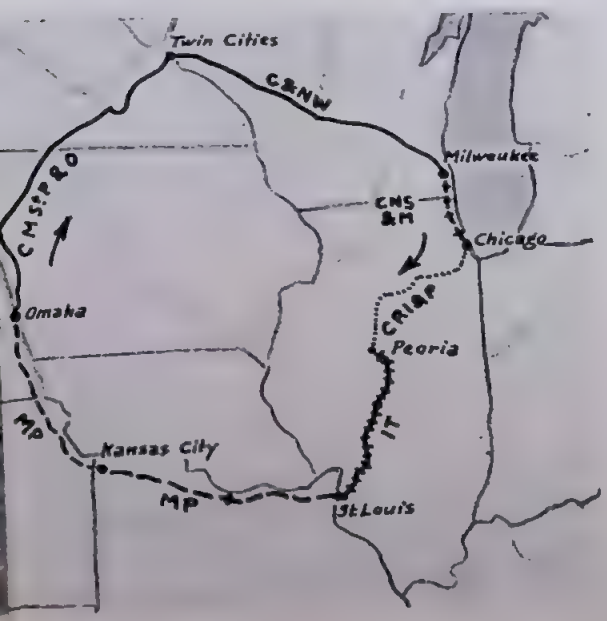


Nanson-Oaks-Barham, 6022 Hartford St., St. Louis, M



pecially worth a stopover, as is also Cumberland, at the foot of the steep Allegheny Mountains grade. Out of Baltimore runs the little Maryland & Pennsylvania Railroad [December 1941 TRAINS], good for an intriguing one-day side trip to York, Pa.

the North Western *"400"* [November 1941 TRAINS] does the Minneapolis-Milwaukee run. While the trip can be made in four easy daylight jumps, at least a day should certainly be allowed for stopover in St. Louis, whose Union Station serves 17 railroads. The St. Paul Union Station is the best place in the Twin Cities for train watching.

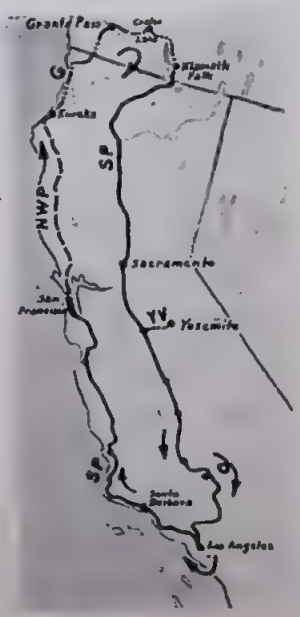


A. C. Kalmbach.

6. California

2060 miles, 6 days.

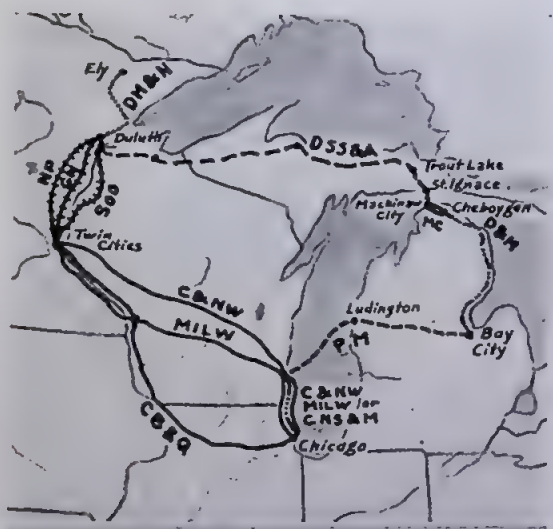
Until one has been there it's impossible to sense the magnitude of California. Here is a 2000-mile trip which but covers the high spots of the state and dips slightly over the border into Oregon, with orange groves to the south near Los Angeles, giant Redwood trees to the north along the Northwestern Pacific near Eureka, always-cool mountains here and there and the flat, hot, dry San Joaquin Valley in the middle of the state. The southern half of the trip is covered by the *Daylights* and was described in detail in the January 1942 TRAINS. The northern half includes, to the railfan's delight, the Northwestern Pacific from San Francisco Bay north to Eureka in the heart of the Redwood country, and, to the railfan's horror, a bus from Eureka to Grants Pass and thence past Crater Lake to Klamath Falls, on the Southern Pacific's main Cascade Route between Oregon and California. From Merced, on the San Joaquin Valley Line of the Southern Pacific, a side trip of as little as one day is possible over the Yosemite Valley Railway to El Portal (photo).



7. Great Lakes

1557 miles, 5 days.

Have you ever traveled on a seagoing railroad? And have you ever ridden a mixed train? You can combine both on this circle: the Pere Marquette car ferry between Milwaukee and Ludington and the mixed train on the Pere Marquette between Ludington and Saginaw, 12 miles from Bay City. The Detroit & Mackinac is a 242-mile almost-Class I railway, while the Duluth, South Shore & Atlantic is a Canadian Pacific subsidiary well in the Class I bracket and traversing the interesting iron and copper country along the south shore of Lake Superior. Part of this ride must be by night (sleeper available). At Duluth don't miss a side trip to Ely on the Duluth, Missabe & Iron Range [November 1941 TRAINS]. The balance of the circuit is quite conventional railroading with wide choice of routes.



Dan Olsen, 50 Luverne Ave., S., Minneapolis, Minn.

8. Colorado

1030 miles, 5 days.

Colorado has been called the Traveler's Paradise. This land of deep rocky canyons, loud locomotive exhausts, and towering snow-covered peaks must be seen to be believed. The suggested combination standard gauge-narrow gauge circle includes such drawing cards as the Moffat Tunnel Line [January 1942 TRAINS] and the Rio Grande Southern [February 1942 TRAINS]. If you have an extra week or want a really restful stay, spend a few days at the fine hotel in Glenwood Springs. Here you have the desert and the mountains at your side. Here the Colorado Midland once clanked its way, and not too far away is the Crystal River and the Aspen District. The all-day round trip between Durango and Silverton must not be missed, by any means. Even the idea of threading a railroad through the deep, narrow canyon of the River of Lost Souls is preposterous. The Silverton mixed train runs only on Tuesdays and Saturdays, so plan your schedule with this in mind. The narrow gauge main line between Durango and Alamosa crosses the Rocky Mountains by the gorgeous Cumbres Pass (el. 10,015 feet) and winds high above

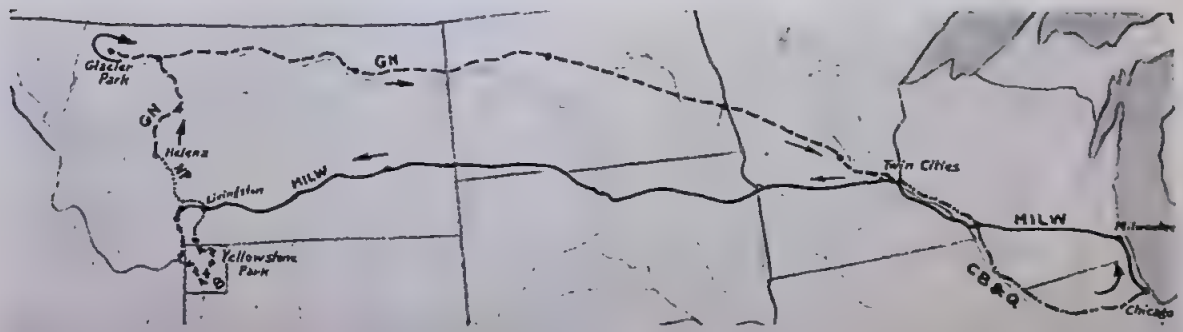
9. Rocky Mountains

3435 miles, 10 days.

It's a long way, but there's plenty at the end of the line. Going west, be sure to get up early and watch the change from steam to electric engine at Harlowton, Mont. You'll be in Yellowstone National Park by noon that day. Allow plenty of time for stopover in the park. From Yellowstone National Park to Glacier National Park via the routing shown is daylight riding among the Big Belt Mountains and along the Upper Missouri River. The Great Northern near Glacier National Park is well worth while for the train ride alone, but the park stopover should not be omitted. On the eastern end of the trip use the *Hiawatha* and the *Zephyr* between Chicago and the Twin Cities. Both trains follow the Mississippi in daylight, the Milwaukee on the west bank, the Burlington on the east.

Henry Griffiths, 1316 River St., Boise, Ida.

Toltec Gorge, magnificent in the late afternoon sunlight. By all means ride this section in the quaint luxury of the narrow gauge parlor car. At Colorado Springs take a day out for sightseeing with a cog road ride to the top of Pikes Peak on the Manitou & Pikes Peak. Mile-high Denver, with snow-capped peaks in its back yard, is a city with a personality all its own. On that extra day leave Denver at 8:45 a. m., riding the Denver & Salt Lake's No. 1 up to the East Portal of the Moffat Tunnel. Twenty minutes behind will be the *Exposition Flyer*. Watch the mountain swallow it and then spend the next hour and a half looking over the beginnings of the old line that went over the top of the mountain. Be careful to catch No. 2 at 12:32 p. m. for your return to Denver. Trains don't run very often up here. On your Colorado vacationing, and on most other trips for that matter, you'll get a lot more for your money and effort if you can spend a few minutes reading about the country beforehand. We recommend, for a concentrated picture, the *Encyclopedia Brittanica;* for more leisurely reading, the *National Geographic*. Be sure to take along copies of TRAINS describing the territory; they readily fit the top of your suitcase or even roll up to fit into the pocket.



.W R. McGee, 418 N. B St., Livingston, Mont.

Keeping Them Rolling *

★ **Motive power and rolling stock both get periodic checkups and overhaul jobs.**

By Robert Selph Henry.

To keep 45,000 locomotives and nearly two million cars on the road and running takes watching and work—and a lot of both.

The watching goes on all the time, and all along the railroad. It begins with the inspection which every car gets when it comes into the hands of a railroad, whether from a connecting line at some point of interchange or from a shipper at a loading point; and it continues with the final check given a locomotive before it leaves the engine house for its run or its day's work in the yards. From that beginning, so long as the car or the engine is on the road, it is under the watchful eyes of many men—not only mechanical inspectors whose business it is to watch cars and engines, but all manner of railroad men, the operators in wayside stations, men on the sections, crews of trains, all of whom instinctively, half-consciously watch passing trains to see that nothing drags beneath the cars and that visible loads are riding as they should.

The watching is done everywhere and all the time, but the work is done at repair points by the mechanical forces. A repair point may be no more than a simple pit where locomotives dump their ashes and are serviced between the work of two days, or a "rip track" where cars suffering from minor disability are set out to be repaired in short order, and sent on by the same or a following train. Or a repair point may be a central locomotive shop, equipped to strip an engine down to its bare bones and build it back again, as new, or a general car shop where whole fleets of cars are rebuilt by the moving-assembly method.

A few railroad shops are equipped to build "power" outright, or to build cars new, but generally railroads buy equipment from companies specializing in its manufacture. Railroads are not manufacturing enterprises making things and using them to produce the service which they sell to others. Their shops, therefore, are not commonly centers of manufacture but rather function as repair shops. The materials on which they work are the cars and engines worn or damaged in service, which come to them to be restored for further work by the application of labor and materials.

And yet the railroad shop has played a powerful part in breaking out the path and setting the pattern for manufacturing undertakings of other sorts. To no one man does the modern industrial system of organizing and scheduling the flow of work owe more than to the late Walter Chrysler, who applied the principle in the work of the Buick Motor Company, of which he was long works manager, and the Chrysler Corporation, which he founded. But Mr. Chrysler, as he related in his autobiography written in collaboration with Boyden Sparkes, carried the principle with him when he went into the motor-car industry from his position as works manager of the Allegheny plant of the American Locomotive Company, where he went after learning his trade as a machinist in the railroad shops of the Union Pacific at Ellis, Kan.

To know in advance what it would cost to build a $40,000 locomotive—that being in the days before $150,000 steam locomotives or $450,000 Diesels—and to know when it could be delivered, Mr. Chrysler wrote, required the closest sort of figuring not only as to costs but also as to the scheduling necessary to bring together at the right spot and the right time the different parts of the locomotive, to be assembled in the right order. That sort of calculation and scheduling he did not find in the then-young automotive industry, but he introduced it, with what success the records of the companies with which he was connected show.

* From the new book *This Fascinating Railroad Business*, $3.50 from the publishers, Bobbs-Merrill Company, Indianapolis, or at your bookstore. Copyright, 1942, the Bobbs-Merrill Company.

Norfolk & Western.

Inspecting journals.

The car inspector at division point or interchange yard checks the car journals carefully to see that the bearing brasses are not scored and that the lubrication is sufficient. Hot boxes were once a major source of train delay and even of accident, but are now rare. Usually the lubrication is by waste, soaking up oil from the sump in the bottom of the journal casting. Improved methods have been tried, including pads and mechanical circulation of the oil.

The operation of a railroad repair shop, as distinguished from a shop which builds locomotives or cars, presents even greater difficulties in planning and scheduling work. The layout and design of such a plant is a necessary compromise between the terrain available for its building and the divergent ideas and needs of the three major activities involved in railroad operations—the construction and maintenance of tracks, the repair and servicing of rolling stock, and the running of trains.

The Work of the Shops.

Because a shop is a center of activity where these three sorts of work come together, the cooperation of all three is needed in determining how to design and place the buildings, and lay out the tracks and switches which give access to the shop (which is work done by the engineering department) in such a way as to facilitate the bringing in of cars and engines for attention or repair, and taking them out again after they have been serviced (which is work for the transportation department), as well as to suit the mechanical department, which runs the shop and makes the actual repairs on the equipment. It is the rare and unusual shop layout which satisfies all these conditions.

The work of the mechanical department comes to a focus at major terminal and shop points but, like other activities, it is also scattered over the hundreds or thousands of miles of line of each railroad. The farthest "outpost" of the mechanical department is the car inspector. Car inspectors are found at interchange tracks, where cars pass from one railroad to another; at receiving and classification yards, where trains pull in from their runs to be broken up and reshuffled for the next move; at industry yards, where cars are prepared for loading by shippers or are assembled after they have been loaded; and at forwarding or departure yards, where trains are given a final inspection just before leaving for their runs over the road.

Each car which comes to a road in interchange is inspected at the point of interchange before it is received, to see that it complies with the interchange rules of the Association of American Railroads, subscribed to by all railroads, and that it is free of "penalty defects" under the safety-appliance laws and regulations. Note is made of any defects which should be repaired at the charge of the delivering line, rather than of the line receiving the car. Quite commonly the inspectors of the delivering and the receiving line are one and the same man, representing both roads.

The whole subject of car interchange is governed by the A. A. R. code of interchange rules, which dates back to the original code adopted by the Master Car Builders' Association in 1876, many times amended since to meet changing times and conditions. In general, the code provides that defects developing from ordinary wear and tear while a car is in the possession of a railroad shall be repaired with standard parts and at standard prices for labor and materials, the cost being charged to the line which owns the car. Defects or damage resulting from mishandling or abuse of the car by the line in whose possession it is are to be made good at the cost of that line, rather than of the owner. There are borderline cases, of course, which are determined by an arbitration committee of the Mechanical Division of the A. A. R.,

whose decisions are final unless successfully appealed from at the annual meeting of the division.

Inspection.

Cars placed for loading at industries or on team or house tracks are inspected before placement, particularly with reference to their suitability for the sort of loading for which they have been ordered. Not every box car is good enough to carry grain or flour, for example, while a car which has been contaminated by a load of some such freight as green hides cannot be placed for loading with foodstuffs. After cars are loaded, they are again inspected, before being put into trains, as to their safety features and as to the compliance of their loading with the loading rules first adopted in 1896 by the railroads, with the cooperation of shippers, and revised from time to time.

Through tests carried out jointly by shippers and the loading committee of the railroads, the best and safest methods of stowing various sorts of freight in or on cars have been worked out. Where matters of safety are concerned such rules are made mandatory. Badly loaded or stowed packages in a box car might do no more than cause damage to the packages themselves, but a log or a length of pipe, badly loaded and improperly secured on a flat car or a gondola, might roll off and wreck a train.

As trains pull in from their runs into receiving yards—the tracks provided for them to get in out of the way before being "classified"—inspectors watch them as they roll by and listen to them as well, that being the best and quickest way to locate pounding or flat wheels. When the train comes to a stand, inspection is made beneath and above the cars, to check the wheels, the journal boxes and lubrication, the running gear, the draft gear, the brake rigging and hand brakes, the air brakes, the coupling, the grab irons or hand holds on sides, ends and top—an inspection which can be made by the practiced eye of an inspector in far less time than it takes to list all the 200-odd possible defects for which each car is checked.

If the yard in which the train is to be classified is a hump yard, in which a switch engine slowly pushes cars over the brow of an artificial hill from which they coast down the slope into the proper classification track, there is quite likely to be a pit between the rails, on the approch to the hump, from which an inspector aided by a strong light can see things underneath the cars more easily and more quickly than he could from the ground level.

After trains have been classified, and before the newly arranged and assembled trains start out on the road once more, they are again inspected in the forwarding or departure yard to check any defects which may have developed while the cars were being handled in the terminal, and especially to test the working of the air brakes. In larger yards compressed air is piped to the proper place for making this test without waiting for the engine to be coupled up.

In smaller yards, this test cannot be made until the engine has been hooked onto the train and has had time to fill the air reservoirs on all cars, clear back the length of the train. When that has been done, the car inspector signals to the engineer to apply the brakes. With the brakes on, the inspectors pass along the train, checking each car to see that the brakes did actually go on, and go on with a "travel" of the brake piston neither too short nor too long. Having inspected the train from head to rear to see that the brakes went on, he signals to the engineer—by four blasts of the signal-line whistle if the train is a passenger, by raising and lowering his lantern if a freight—to let off the brakes, and then comes forward along the train to see that they do release.

This process of testing the air brakes is repeated every time a train is cut for any reason, to make sure that, in recoupling, the air line was properly coupled up, and that the air brakes are working for the length of the train. As a further insurance, the engineer makes a running test of the brakes shortly after getting under way, just to make sure that the brakes are connected up and working. But even with such precautions at least one collision has been caused by a hobo on the "blind baggage" between the tender and the first head-end car unwittingly kicking over the angle cock so as to cut off the air supply between engine and train.

And so, having inspected all cars in the train to see that they are safe to run, that they are safe for the trainmen who have to work around them, and that they are safe and suitable for the lading they carry, the

car inspector sends the train on its way to the next terminal, where the process of inspection (the British call it "vehicle examination") is repeated once more.

Road Trouble.

With all the inspection and care which can be bestowed upon them, cars do sometimes develop trouble upon the road. The best-known form which such trouble takes is the "hot box," due to a failure of lubrication between the journal or extended end of the axle, and the journal brass, a nonfriction metal bearing which rests upon the top of the journal, and upon which there rests the weight of the car. Lubrication for the contact surface between journal and brass is provided on virtually all freight cars, and on the majority of passenger cars, by oil-soaked waste carried in the journal box, in contact with the under side of the revolving journal. Improvements in lubrication have been so great in recent years that delays on the road because of freight hotboxes are only about one-fifth to one-seventh as frequent as they were 15 years ago. On many passenger cars this simple but effective method of lubrication has been replaced by roller or spherical nonfriction bearings, sealed in.

Cars may be delayed on the road, also, by a burst air hose, which releases the air pressure and causes the brakes on the whole train to set, or by pulled drawheads, when draft gear or coupler yokes give way under some great and sudden strain, or by broken coupler knuckles. So great has been the improvement in freight car design and maintenance that the frequency of delays from such causes is now but a fraction of what it was 15 or so years ago. On one railroad which has kept careful figures on such occurrences, the number of pulled drawheads in the late 1920's and early 1930's ran around 125 a year, from which number there was a steady decline until in 1939 and 1940 there were none. Similar declines were recorded in the other types of minor delays on the road.

Careful and repeated inspection of cars at terminals frequently results in the discovery of defects in some one of the many particulars in which a car can be defective. If the defect is not serious, the car may be repaired right in the train where it stands, or it may be switched out to the rip track for repair in time to go forward to its train, or in one following closely.

There was a time, before the adoption of the steel car, and in the transition period when both wood and steel cars were being run in the same trains, when it was cynically observed that freight cars traveled from rip track to rip track. If the observer was in a bitter mood, he might change the word "traveled" to "staggered." Whatever truth there may have been in the observation, it is no longer true. At the time of the first World War, one-third of all cars were of wooden construction. Now there are only cars of steel frames and structural parts, frequently with wood linings or sheathings. The modern steel car pretty well stays off the rip track and on the road, until its time comes for general shopping and overhaul. As a result, car mileage between shoppings has been multiplied on some roads by as much as three times in recent years.

"Cripples" which cannot be repaired on the rip track, either for lack of time or lack of facilities, are unloaded if they are under load, and sent to the car shop for heavier repair. The bulk of the work of general car shops, however, is more in the line of rebuilding cars in groups or series, rather than repairing individual cars.

When a group of cars goes into the general car shops for overhaul or rebuilding, each car is stripped. The car—if a wheelless, brakeless frame and body can be called a car—and its separated parts move through the shop by different routes, converging to meet in the "trimming house."

The body is lifted from its trucks by a crane overhead or by jacks beneath, and placed on horses or dummy trucks. The trucks are wheeled off to a truck shop, where they too are broken down into their parts, which, in turn, go to the wheel and axle shop, the spring shop and the like, for repair and reconditioning. Similarly,the draft gear, the brake assembly and other detachable parts of the car which may need attention are stripped off and sent to the shops which do that particular sort of work. Meanwhile, the car body is getting attention from steel workers, or wood workers if it has wooden sides, running boards, floors or linings, as most "all-steel" cars do. As work on it is completed, it is moved on to meet its rejuvenated parts in the trimming house, where

the car is put back together, painted with spray guns, weighed to get its light weight, stenciled with the appropriate information about itself, including the place and date of its rebuilding, and turned out as good as new for more years of service—frequently, in the case of modern steel cars, for as much as six to ten years without seeing the interior of a shop for anything more than the most minor adjustments, or such routine and periodic attention as repacking journal boxes and cleaning and stenciling air brakes.

Locomotives, too, have their periodic and routine visits to the shops for the testings, inspections and reports as to various parts of the engine, which are required monthly, quarterly, or semi-annually. However, unlike cars, which are sent to the shop only when they need it, locomotives go to the engine terminal at the end of each run, as a matter of routine, to be "turned"—a process which involves much more than merely running the engine across the turntable and reversing its direction. "Turning"—a name which reflects the fact that the roundhouse is the heart of the engine terminal and the turntable the center of the roundhouse—is really a complete servicing of the engine after each run, including such minor repair work as needs to be done, before it is sent out again.

When the locomotive is cut off from its train upon arrival at station or yard, it is taken in charge by a "hostler," a name reminiscent of the days when the locomotive was an "iron horse" and his stable was the roundhouse—which, by the way, isn't always round. There are square engine houses and rectangular ones, where tracks go into the house without passing over a turntable in the center of a fan of tracks as in the true roundhouse.

The hostler runs the locomotive to the terminal, where on the "coming-in" track, in order, it will pass over an inspection pit for checking its condition and an ash pit, either dry or filled with water, where the fires are cleaned, if they need it, and the ashes and cinders are dumped; it will pause under a coal chute, at a water column, at the sand house and at the oil house to be filled up with those essentials; and it will pass over the turntable on its way either to a stall in the roundhouse, or to an outbound lead track where it awaits its next call for a run.

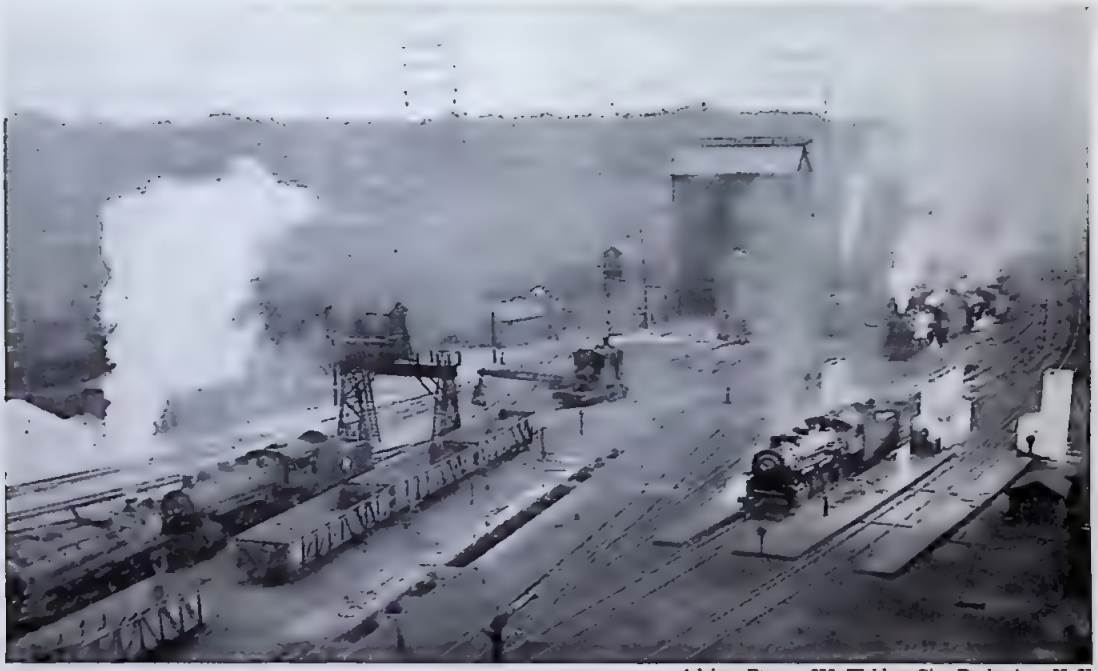
If the inspection, which is aided by a report on the engine sent in by the engineman who drove it on its latest run, shows need of mechanical attention, it is likely that it will pass into the roundhouse. The roundhouse, once looked upon primarily as a shelter for the brave and bright paint and gilt of the engines, is now regarded as chiefly a light repair shop. At the "front" of the house, which is the outside, farthest from the turntable, several stalls are extended, usually, into a bay equipped as a small machine shop. Boiler work can be done in the roundhouse, also, as well as repair to the running gear and machinery of the locomotive and to such accessories as the air pumps.

Running Repairs.

Each engine stabled in the roundhouse is stopped with its chimney under a "smoke jack" through which the smoke and gases—or most of them—pass out. In some situations, the smoke jacks are equipped with "smoke eaters," which draw the smoke off to a tank or pit where it is passed through water as a solvent, from which it emerges as a clear gas, leaving its unburned carbon and other solids behind. Smoke eaters are installed, also, on the storage tracks and light repair tracks outside the roundhouse, where many engines are held.

At least once a month, as required by the safety regulations, and oftener than that in bad-water territory, the boiler of every steam locomotive is emptied and washed out. In many of the larger and more modern terminals the washing is done with hot water, so that the boiler need never get cool. In such terminals, also, hot water is used for refilling the boilers and resteaming them. Much of the hot water and steam used to fill and steam up out-going engines is blown out of the boilers of engines which are coming into the terminal for servicing. This practice of steaming up an engine from an outside source, such as a stationary powerhouse or incoming engines, rather than from its own fire, saves fuel, saves time, and reduces the cooling and heating stresses set up in the boiler.

Ordinarily, if no unusual work is to be done, a steam locomotive will be turned and ready to leave on its next trip within anywhere from an hour and a half to three hours after it comes into the terminal. In



Adrian Buyse, 228 Weldon St., Rochester, N. Y.

Engine terminal, Milwaukee.
In the foreground are the ash pits and washup stands; to rear are coal bunker and sand house. The white chimneys are for blowing out boilers.

severe climates it will be held in its stall until there is a call for its services. More frequently, however, it will leave the roundhouse—if it had been taken into it—and pass out over the turntable, or perhaps through a crossover which by-passes that busy spot, onto an outside storage track, where it stands quietly breathing until its number is put up by the engine dispatcher, whose office usually is near by.

As power has grown in size and length, the stalls of the roundhouse have had to grow with it. The doors through which engines pass, and which are closed behind them in Wintry weather, are about 14 feet wide and 17 feet high. Stalls a hundred feet long, from rear wall to front, are common, while many are longer to take care of the longer power and leave room for men to work around it. The usual way of enlarging a roundhouse when that is necessary is to knock out the front walls—it has been known to happen accidentally in the movement of some extra-long engine that needed more room—and add bays to a few stalls.

The new heavy-duty Diesel-electric locomotives are so long that this treatment has not been adopted for them as yet, nor has any turntable been built long enough to take their 190 or 200 feet of length. One of their advantages, however, is that they do not require such elaborate attention at the roundhouse at the end of each run as does the steam locomotive. Diesels commonly run through over two or more divisions or engine districts without having to go into the engine terminal.

A considerable part of the Diesel repair work is done, also, while the engine is on the road. Many larger Diesel units regularly carry a repair man or maintainer, with a supply of spare parts, so that minor repairs, adjustments and replacements can be made on the road—the idea being to keep so expensive a lot of horsepower at work for as much of the time as possible.

There has been a considerable change in the use of the steam locomotive during the past 20 years, also. The old idea that a locomotive *had* to be serviced after every run, and that a run was only about 100 miles for a freight locomotive and 150 miles for a passenger, has gone into the discard. By extended runs of anywhere from 200 up to 1000 miles, in regular service, the steam locomotive has proved that it is tougher than most

persons realized. Between St. Paul and Livingston, Mont., more than a thousand miles, the Northern Pacific runs steam power regularly without change. Even longer runs have been made experimentally, without dropping the fires or going into engine terminals.

The Back Shop.

But regardless of the length of run, or the length of time which a locomotive can stay out of the shops, there comes a time when it must go in not merely for servicing but for serious repairs beyond the ability of the roundhouse shops. When that time comes, whether as a result of failure or accident, or of ordinary wear and tear in making mileage, or because of the requirements of the safety laws that as a precautionary measure certain types of work shall be done on engines at certain periods, the locomotive goes into the "back shop" for "classified repairs."

Classified repairs, strictly speaking, cover five different degrees of overhauling of a locomotive, from Class I to Class V. In common railroad language, however, only the first three classifications, involving the heavier and more complete work on engines, are referred to as "class repairs," while the lighter work of Classes IV and V is usually called "running repairs."

The procedures in no two back shops are exactly alike, because of the difference in layout, equipment, and the locomotives which are worked on, of course. All engines which go into the back shop, however, are going out of service not for a few hours or for a day or so but for periods of anywhere from several days up to several weeks. Their fires are dumped, therefore, as they go in, their ash pans cleaned, their boilers emptied of steam and water by being "blown down" and drained. The front end, the fire box and ash pan are washed out, and then begins the stripping of the engine, which varies according to the class of repairs it is to receive.

Locomotive shops may be laid out on the longitudinal system, with working pits spotted along tracks running lengthwise of the erecting shop, in such fashion that the locomotive may be moved from spot to spot as each group of things is done to it; or on the transverse system, in which the erecting pits are side by side, extending across the erecting shop, with cranes which can lift whole locomotives over one another from pit to pit; or transfer tables, running along outside the shop, on which locomotives may be moved from track to track of the transverse layout. Many shops, if not most, are a combination of the two systems, in which standard lighter repairs are made in longitudinal shops where the locomotives are moved from spot to spot to meet the men and materials, while heavier repairs, involving complete stripping down of the engine, are done in transverse shops where the men and materials are taken to the locomotives.

If the locomotive is to get the heaviest and most complete of repair jobs, the tender will be disconnected and emptied, the tender going to the tender shop, the locomotive to the locomotive shop. While a list of material to be needed on the job is being made out, the stripping gang tackles the locomotive. All outside pipes, gauges and boiler mountings come off. The main and side rods come off, and the motion work to which they are connected. Off come the air pumps, the power reverse gear, the fire door, the feedwater heater if the locomotive has one, all the outside accessories—until the boiler, the front end, the fire box and the cab stand by themselves. Off comes the cab, and the iron jacket which covers the boiler, if that is necessary, and the "lagging" or insulation between jacket and boiler. The final touch in stripping an engine is the removal of the fire box.

The stripped frame and boiler are lifted from the wheels, usually by a giant crane overhead. In small shops the wheels are dropped from the pedestals which hold them in place, either in a pit or on a wheel table. In either case the wheels are trundled off to the wheel shop. Springs come off to go to the spring shop, while all the other parts that have been stripped from the engine are carried, usually by power-drawn buggies or by conveyor, to special shops where they will be worked on. The body of the engine, meanwhile, is moved on a transfer table or by means of an overhead crane, to be set down on the spot where it is to stay while much of the work is to be done upon it.

The boiler, usually, remains on the main frame, which, on many modern locomotives, carries with it the cylinders and valve chests. A new fire box, if one is necessary, is put on the boiler where it stands; the boiler flues are removed, Federal law requiring that this

Not a garage.
A roundhouse isn't a place to store engines when not in use. Fact is, a locomotive can be stored quite well out in the weather, but the roundhouse is needed for servicing and light repairs. Locomotives are run in with front end toward the outside of the circle so as to allow more room around the running gear, where the greater part of repair work must be done.

Courtesy Boston & Maine.

be done each four years; necessary work is done on cylinders, pistons, piston rings and rods, and on valves, valve pistons, rings and stems.

Then the reassembly of the disjected members of the locomotive begins. The lagging is put back on the boiler, the jacket is put outside the lagging, the pipes and other boiler fittings are mounted; the wheels, with their axles, tires, pins and bearings all in order, come back to the locomotive in the erecting shop, as do the main and side rods, motion work and other parts.

As the locomotive begins to look once more like a living locomotive, its tender comes back, after having had its trucks overhauled, its frame repaired, its tanks taken off, tested for leaks and repaired; after having been sand blasted, and painted, including its name and number.

Tender and locomotive are reconnected, hot water and steam from a stationary supply plant are put in the boiler, a fire is built in the fire box, and the locomotive is ready to make another 75,000 to 125,000 miles before it is due for the back shop again. It and its various parts will have been worked on by men of many trades—machinists, boilermakers, blacksmiths, sheet-metal workers, electricians, painters—and by many machines. They will have been moved on transfer tables, lifted by jacks and by cranes of all sizes, from the little portable ones which carry small parts, up to the giants which lift the 250-ton body of a locomotive and set it down where it is wanted, or carried off by drop-pit tables below the track level. Materials required will have been brought from storehouse to the job, by routes carefully worked out to avoid crosshauls and back-up movements, by portable lifters or mechanical "shop mules"—and after five or six weeks of nothing but expense, the locomotive will be ready to get back on the road earning its keep.

To earn its keep on the road, the locomotive must haul trains without delays or breakdowns. Once in a while there is an "engine failure," of course, but of late years they have become more and more rare. The number of miles run between delays on the road by reason of any mechanical defect or failure of power is six or seven times greater now, on the average, than it was about 20 years ago, as a result not only of improved materials and design of locomotives, but also of better inspection and shop practices.

Repair is the largest single item of expense in locomotive operation. More money is spent for that purpose than for the fuel which the locomotives burn, or for the wages of engine crews who man them in yards or on the road. But, as the record of the past 20 years shows, money wisely spent in the shops saves money on the road—and nothing is quite so expensive to a railroad, directly and indirectly, as breakdowns, tie-ups and delays on the road.

Traveling Salesman, II

*By Truman Blasingame.**

MY FATHER was an engineer on the Georgia Railroad, between Augusta and Atlanta, for more than 50 years. This road used to do a great deal of local passenger work, most of which has disappeared in recent years; some years back there was one train, No. 7, which left Augusta about 3:30 p. m., and a frequent passenger on this train was a man who lived at a station about 50 miles from Augusta.

This man's house was about a mile beyond the station where he got off, and he developed a nice system for getting himself delivered right to his front door. He would pretend to be dozing when his station was reached, and since the train was always crowded, the conductor would overlook him. Then, just after the train left the station and was getting under way, he would suddenly wake up and rush to find the conductor or flagman and protest that he had been allowed to sleep past his station. Of course, the crew had to apologize and stop the train and let him off.

It might have gone on longer than it did if the passenger hadn't got his timing down so perfectly that the second stop would be made right in front of his home, and after a few times the conductor saw where he went when he left the train. Then a great light dawned, and he had a consultation with my father.

Next time this customer got on at Augusta the conductor sent word forward that he was on hand. Everything proceeded according to schedule, and when the passenger yelled that he had been carried by his station, the conductor reached up and pulled the cord as usual. But that time nothing happened; he pulled it again, and still the train continued to gather speed. The passenger fumed, and the conductor protested that he couldn't imagine why the engineer didn't heed the signal.

But by that time the passenger's own imagination was working pretty well, and when he finally got off at the next station he had the right answer, for he never tried it again.

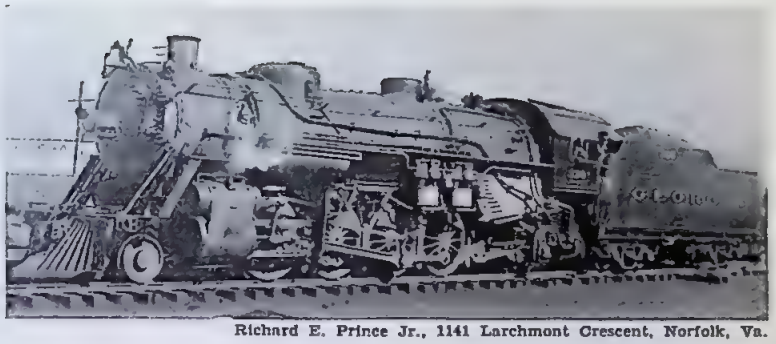
Mr. White's story about standing on his rights with respect to having baggage carried on the same train with himself reminds me of the time when I stood on my rights and caused a Pullman conductor some bad moments. Let me say at once, however, that while at the time it seemed a smart thing to do, I realize that actually it was inexcusable to put a member of a train crew on a spot like that, and I would not dream of doing it again.

This was about 1925, and I lived in Tampa, Fla., at the time. The Seaboard Air Line had just completed its extension across the state into West Palm Beach, and I went over, more for the ride than anything else. This was right at the peak of the well known and sadly lamented Florida boom, and the state was full of people. I knew trains were filled to capacity; still, I overlooked the necessity of making Pullman reservations in advance, so when I went down to the West Palm Beach station

* Glancing back over the November 1941 issue I found that I had failed to read "The Traveling Salesman" by Victor H. White. I found it very interesting, particularly since it reminded me of these several amusing incidents.—*The Author.*

A connecting link.

Georgia Railroad, a 171-mile main line running between Atlanta and Augusta, joins with its affiliates, Atlanta & West Point and Western Railway of Alabama, in forming a connection between L&N on the west and Atlantic Coast Line on the east, and is in fact leased jointly by these last two roads for 99 years from 1881. With the Southern Railway and ACL, the Georgia links Atlanta and Charleston, S. C.



Richard E. Prince Jr., 1141 Larchmont Crescent, Norfolk, Va.

On the Georgia Railroad

Leased by Louisville & Nashville and Atlantic Coast Line.

Georgia locomotives.

The Georgia Railroad has 49 locomotives, the bulk of them Ten-Wheelers, Pacifics, Mikados, and switchers. The 254, below on the day train between Atlanta and Augusta, was formerly an Atlanta & West Point engine. The freight, right, is behind No. 325, a 1926 Lima-built Mike, the twin of the 326 at top of page. These two are the road's newest power.

Both, Truman Blasingame, P. O. Box 917, Augusta, Ga.

about 8 p. m. and asked for a lower in the Tampa car, I was politely but firmly told that the Tampa car was full, and that there was one lower left in the St. Petersburg car which I might have, or I could sit up.

This meant getting up and out of the train at 5 a. m., which in those lush days was a terrible hardship, but, there being nothing else to do, I bought the lower in the St. Petersburg car. The ticket agent filled in the stub and said "Lower 3, Car M." I went on out to the train and located Car M, and just as I was about to hand the porter my bag I heard him say to a passenger ahead of me, "Car M, for Tampa."

I realized in a flash that, in the rush and confusion at the ticket window, the agent had entered on my ticket the letter for the Tampa car instead of the one for the St. Petersburg car, as he had intended; thus he had unknowingly sold two tickets for the same berth. The fact that he hadn't realized this and sent word out to the train meant that he had entered my ticket on the form for the St. Petersburg car.

"Well," I thought, "if my luck holds and the other fellow isn't already in the berth, there is going to be plenty of excitement on this train in a very little while." I got on, and sure enough, the berth was made up and nobody around. Losing no time, I undressed and went to bed, the conductor already having my ticket.

There wasn't long to wait; the train was just pulling out when the curtains were parted timidly and there was the Pullman conductor and a male passenger who, it appeared, had a ticket calling for the very berth I was in.

"Friend," said the conductor, "you seem to be in the wrong berth."

"Why," I replied, "what car is this?"

"Car M," said the conductor.

"And what berth is this I am in?"

"Lower 3," said the conductor, mopping his forehead.

"Car M, Lower 3, is what my ticket calls for, so what's all the shooting about?"

"Well," he replied, "it looks as if this gentleman here has a ticket that calls for the same car and berth as yours. From what I can tell from the forms, you must be in the St. Petersburg car."

"No," I said, "I think any jury would agree that I am now in the Tampa car, and since that is where my ticket puts me, and I'm fairly comfortable except for certain excess conversation which I hope will soon quiet down, I think I'll stay right here."

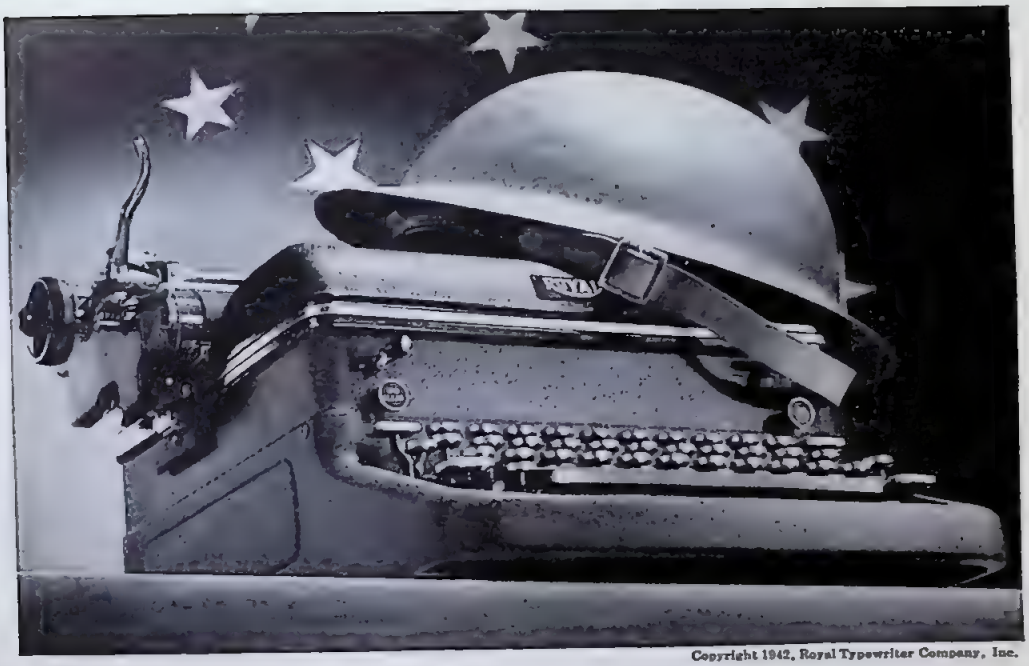
Upon which I gently closed the curtains and pulled the cover over my head. The other fellow must have been a good sport, for I heard nothing more, and as far as I know he occupied my berth in the St. Petersburg car—and got out of it at 5 next morning while I slumbered peacefully until 7. I repeat, I am not proud of the incident.

I can also match Mr. White's story about the *Portland Limited,* which made up more time than he thought it would. I left Augusta once on the Atlantic Coast Line, bound for Portsmouth, Va. To accomplish this, it was necessary to change at Florence, S. C.; leaving there around 9 p. m., there was another change at Rocky Mount, N. C., at 2:30 a. m., with arrival at Norfolk in the early morning.

At that time I had never ridden any of the good trains on the Coast Line's main line, and while many of the trains on the branches, such as those from Augusta to Florence and from Rocky Mount to Norfolk, do not hurry themselves, the main line is a different story. The train I was to take at Florence was more than two hours late, and when I got on I consulted the Pullman porter, and he and I agreed that we would be late at Rocky Mount and that I could get very nearly a whole night's sleep. He evidently was new on that line also.

Next thing I knew the porter was shaking me roughly. "Boss," he panted, "get up quick. We's pulling into Rocky Mount now. Dis here man done made up 'most all dat two hours, and you ain't got no time to dress."

I knew better than that, of course. I could have stood on my rights and taken my time about dressing, and the train would have had to wait. But George would probably have lost his job for failing to get me up in time, and a fast train would have been delayed, and coming from a railroad family I well knew that the latter was a crime that one does not commit. So I slipped on my pants over my pajamas, put my feet into my shoes and gathered the rest of my belongings under my arm, just as the train stopped. Fortunately the other train was right alongside, so it wasn't a long trip, but it certainly was a hasty one. The conductor never knew anything about it, and poor George was quite grateful that I didn't put up any argument.



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Letters

★ Interesting sidelights on railroads as readers observe them.

What Is a Short Line?

I'VE just finished my March TRAINS, which I enjoyed even though I thought the January and February issues much better. Those short line articles, such as the one on the Western Pacific, are the most interesting to me. One complaint: How about an annual index? I for one would be willing to pay for it.

George L. Barren.

147 W. Brighton Ave., Syracuse, N. Y.

[We're wondering just what a short line is. Here we compare the mileages between the Delaware, Lackawanna & Western, the Western Pacific and the Lehigh Valley, also comparing the value of these railroads in millions of dollars and the operating income of a given year:

	DL&W	WP	LV
Miles	702	1207	1282
Value (millions)	214	176	219
Op. Inc. (millions)	50	17	45

Perhaps the lower operating income might put the Western Pacific in the short line railroad class. What do readers think? Frankly, it has never occurred to us to consider the Western Pacific as a short line. Annual indexes are sent free of charge to all readers who request them. They are printed after the October issue rather than after the December issue, since October completes a year of TRAINS. —*Ed.*]

Praise for U.S.R.A. Mike.

GIL REID'S cartoon on the C&EI Mike (January TRAINS) does not do full justice to that most excellent of engines, the U. S. R. A. Mikado. On the Pennsylvania Division of the New York Central these engines (NYC Class H-6a) can roll 110 loaded hoppers from Clearfield to Avis just as fast as anyone wants to ride them. The L-1 class Mohawk (or Mountain) is rated for but 125 cars on the same run.

S. H. Fredericks Jr.

U. S. S. *Paducah*, c/o Postmaster, New York, N. Y.

A Sequel.

I'M ENCLOSING photos of two Japanese locomotives, as a sequel to "Asia Express" in the April issue of TRAINS. They were sent to me by a railfan in Japan, before the Pearl Harbor incident.

Lawrence W. Sagle.

Public Relations Dept., B&O RR. Baltimore, Md.

Japanese locomotives. These photos, from the collection of Lawrence W. Sagle, show a Japanese 2-8-2 and an electric locomotive also used on the Government Railways. Notice the engine numbers, which give not only the serial number but the class number and wheel arrangement. The letter stands for the number of driving axles; the first two digits, class number; last two digits, serial number. Thus D5071 is identified as an eight-coupled Class 50, serial number 71. The "E" on the electric locomotive, we presume, identifies it as an electric loco.

Forty Years of Rust.

I BELIEVE the case of the narrow gauge Rockport Railroad is rather unusual. A streak of old-growth bushes marks its course up a little valley, and the new state road is built several feet above its old grade crossing. I traveled this road many years without knowing a railroad had ever been there. Then someone told me about the Rockport Railroad.

"Why, sure!" he exclaimed. "It crossed the road right there in Simington's Corner!"

"Where?" I demanded.

He described the spot, just west of the little bridge, and sure enough, there it was when I went to find it. Fighting my way through those superabundant alder bushes and clawing down through 40 years of dead leaves, I came to the tiny 25-pound steel, the long-rotted ties, and what had once been an excellent quality of mud ballast—abandoned 42 years but never dismantled!

Standing deep in the cool shade of those bushes, looking down at the midget rails almost reverently—four decades of rust standing out in flakes—I drifted back to the middle 90's, heard the distant rumble of a tiny train working up the valley, felt the gentle reverberation of the shiny rails; and in my mind's eye I saw the dinky saddletank nosing around a curve, dump cars rocking and swaying in her wake. I wondered where else in the United States one might find a railroad still intact although no wheels had bumped over the blackened rails for more than 40 years!

The Rockport Railroad was built in 1886, primarily to carry lime rock from the Simington's Corner quarries down to the vessels in Rockport Harbor. The big, belching kilns of the Rockland & Rockport Lime Company were doing a rushing business in those days; the harbor was a forest of masts and spars; scores of windjammers waited for loads and their bearded crews loafed on the wharf absently watching the little engines scurry around.

I found a fisherman baiting trawls, and began putting questions to him.

"Remember the railroad?" he croaked. "'Course I do! The engines? Why, ain't ye seen 'em? They're both buried up there in the lime dump by the river."

I snorted. "If they're buried how could I see 'em?"

He led the way. Across the Atlantic Highway and the old grade of the RT&C Street Railway we went, and on up the river bank. A big pile of abandoned lime loomed through the trees, and approaching it we saw them—two little engines all but buried, here and there part of a stack, a fluted dome, or a piece of cab sticking out.

"Some fellers been trucking off the lime," he explained. "It sweetens sour land."

Where these farmers had dug into the huge pile they had partly uncovered two old Vulcans, but whether it was a resurrection or a ghastly desecration I didn't quite decide. They looked pretty tough. Their ornate cabs were falling apart, the stacks had rusted until mere shreds held them up, and gadgets and levers in the cabs were the worse for time and the devastating action of lime.

"Yip," Sinbad blithely went on, glad of the chance to talk, "I remember when they was running up there. The lime rock outfit was some railroad in them days. They went up to Simington's Corner every morning taking the quarry men to work; sometimes they made a trip down at noon and sometimes they stayed up all day, bringing the crew home at night. Wrecks? Heh! heh! heh! Sure, they had some wrecks. Why——" He paused to light the foulest pipe that ever compared with lobster bait. "Why, I remember once when they tumbled off'n a trestle up there: They was late leaving the quarry that night and the engineer had a woman lined up fer the evening. He was hurrying down so's not to miss out on her, and them little engines rode awful bad. The track wa'n't no too good, fer that matter."

Discounting about half the story, I gazed off through the trees to where a dinky locomotive dodged along the river bank, a string of loaded dump cars reeling behind: No, the track wasn't any too good!

"Yip, they was just coming out onto the trestle, going like tarnation, when she went off the iron; the engine slid down the dump and every one of them cars landed *kerslap!* on top of her. The caboose was hove over the whole mess and landed upside down 'way off in the bushes. Heh! heh! The super was in that caboose and so was a barrel of old oil and grease that they carried fer general purposes; when the caboose toppled over the super landed head-fust in that old oil and it took the whole crew to haul him clear! Heh! heh!"

I laughed uproariously with him. I mused

that if it had been some supers I might have enjoyed it still more, but right now the more concrete facts of the Rockport Railroad interested me.

"Nope, I ain't got no pictures of them engines," he replied. "Wa'n't many people had cameras in them days."

The narrow gauge line was virtually a private quarry road although it published rates and was classified as a common carrier, but no vigorous solicitations for freight are recorded in history. It had owned several older engines about which I could learn nothing, and the two Vulcans buried in the dump-pile had been bought new not long before the road closed down. It must have been more or less a family affair, because the directors were nearly all Carletons and Shepherds, P. J. Carleton being president and chairman, H. L. Shepherd treasurer and superintendent. H. B. Cleaves was general solicitor, but I don't know what his duties could have been, and M. M. Rollins was chief engineer. Brother Rollins must have been a busy man, too, with that mud ballast, small rail, and seven wooden bridges and four trestles to keep in repair!

Construction cost $22,000, the engines $5000, and the three flat cars and thirty dumps $3000 more. There was $30,000 out in capital stock. The last full year of operation was 1895 and the gross earnings were $7064 from hauling 12,000 tons of freight for 58 cents a ton. The operating expense, including $70 for taxes, was the staggering figure of $6013, leaving a very tidy profit for the stockholders. It all seems fair enough considering the 3600 train-miles run that year.

Before I left, the fisherman was determined to relate a very strange experience he once had, relating to the lime rock railroad. There was no escaping him.

"Did ye know Jim Jones? No? Well, his father run the engine here. Jim was a likely youngster and soon learned to run her as well as his old man; he was called 'the boy engineer' and he was running the night the super fell into the oil. Jim went away from here years ago. Jest a few years back me and my wife was down to Noo Yawk waitin' in the Grand Central Depot for her niece to come and steer us out. A big train was in there ready to go and I was watching the engineer oiling around. He kept squinting at me and finally he come over, and sez to me, sez he: 'Ain't yer name Brown?' I says as it was, and he sez: 'Ye don't know me, do yer? Don't ye remember when we spilt the super in the barrel of oil?' 'Great Doom!' I sez, 'if it ain't the boy engineer off the old lime rock railroad!' Now wa'n't that going some? Here he was running the biggest train between Noo Yawk and San Francisco and gettin' paid a hundred dollars a day. And he learnt his railroading right here, boy—right here, on one of them engines!"

It may have been losing the boy engineer or perhaps it was the new electric road that opened up some new quarries, but in either event the years 1896 and '97 were lean ones for the Rockport Railroad; it ran infrequently, and the Summer of '97 saw the engines laid away and the track left to take care of itself. Why the rail was never picked up the old salt couldn't tell me, but he thought it was because the company business was never legally settled.

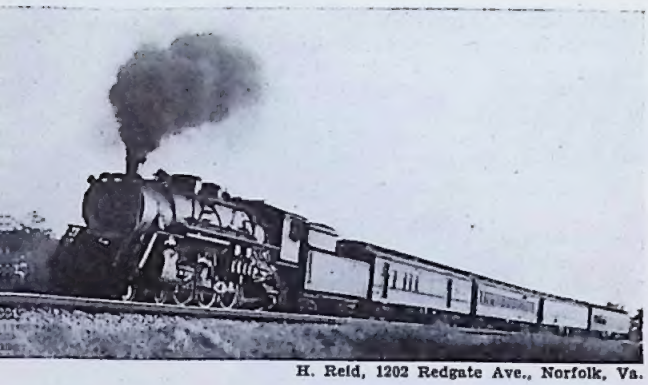
Be that as it may, the Rockport Railroad was abandoned 42 years ago, but to this day has never been dismantled! Here and there a farmer has torn out the offending rails so he can plow the grade into his corn piece, and the wooden trestles have long since gone to dust. A streak of flourishing alder and willow still winds along the river and sometimes through a field; the deserted quarries at Simington's Corner are filled with water, and the little Vulcan engines lie half buried under the lime pile, but officially the Rockport Railroad is still down between Rockport and Simington's Corner, and a three-foot-gauge train is supposedly ready to roll at an hour's notice!

Union, Me. *Linwood W. Moody.*

Denver, South Park & Pacific.

On page 30 of the January issue you state that David Moffat pushed the Denver, South Park & Pacific to Leadville. It is my information that John Evans built the South Park as far as Buena Vista and, as a result of a war over trackage rights between Buena Vista and Leadville (over the Denver & Rio Grande), the new line of the South Park from Como over Boreas & Fremont Pass into Leadville was built by the Union Pacific. Moffat was one of John Evans' right hand men, but neither had anything to do with the completing of the South Park into Leadville.

Denver, Colo. *Mac Poor.*



H. Reid, 1202 Redgate Ave., Norfolk, Va.

Observation cars in reverse.
Virginian No. 214, a Pacific, on train consisting of baggage car, coach, and two observation cars, both of the latter with their observation platforms to the front.

Unusual Consist.

EVERYONE seems to be taking unusual passenger trains to heart lately. One man mentioned a four-section Atlantic Coast Line train, and another made note of an unconventional Union Pacific-Santa Fe double-header. I believe the Virginian four-car train shown in the accompanying photograph is in the "unusual" class, too.

This train usually consists of a mail-baggage car and a regular day coach. On November 29, 1941, there were two observation cars coupled on to the regular consist—with their platforms turned frontward, or backward-first.

The Virginian passenger train is considered a rarity by many railfans, there being but a single train a day each way between Norfolk and Roanoke. I venture to say this is one of a few times a picture of this train has been printed anywhere.

H. Reid.
1202 Redgate Ave.,
Norfolk, Va.

Most Inaccurately Bored Tunnel?

IT SEEMS that every tunnel I've ever read about that has been bored from both ends simultaneously has always been so accurately figured that the two bores met with a misalinement of only a fraction of an inch. What I'd like to know is: Is there *any* tunnel that wasn't bored so accurately?

E. J. Easton.
Toledo, O.

Could Be!

I HAVE heard that if you chock a penny in front of and behind each driver of an engine quite snugly so that the drivers cannot turn without climbing over the pennies, the locomotive is not able to start. Is this true?

Harold Greiser.
Town of Lake, Wis.

Power Roster Increased Two-Thirds.

IN VIEW of the fact that I helped a little on the Alameda Belt Line article in your August 1941 issue, I feel it my duty to send the following developments on this line:

During the week of March 9 the ABL received, from the American Locomotive Company and General Electric, two Diesel switchers, 660-horsepower each, completed February 15 at the Schenectady shops. These are now numbered D-1 and D-2. The venerable Baldwin 0-6-0's are still in service, and probably will be for some time. This gives the Alameda Belt Line a roster of five engines.

John C. Hammond.
1629 Morton St., Alameda, Calif.

New Diesel switcher.
D-2, second of Alameda Belt Line's two new Diesel switchers, both 660-horsepower jobs completed by G. E.-Alco, Schenectady, February 15. Photographed during its first week of service.

John C. Hammond, 1629 Morton St., Alameda, Calif.

The Month

★ Government takes over Toledo, Peoria & Western.

★ First and might-be only railroad to be taken over by the government during World War II is the 224-mile Toledo, Peoria & Western, a small but strategic connection between Eastern and Western roads, by-passing the Chicago area. Under the progressive one-man management of George P. McNear Jr. the Peoria road since 1926 has made many physical improvements and shown noticeable traffic increases. But when most roads agreed to a wage increase under government pressure last Fall, Mr. NcNear did not follow suit, and rather than go on the basis of the so-called standard working rules including generations-old practices such as payment on a mileage basis and use of extra men where not now necessary to do the work, he proposed an increased hourly pay for all time actually worked, including layover time, but no rules requiring inefficient practices and no pay for time not worked. McNear claimed the usual working rules would require 84 men to do the work of 52.

A strike followed, and the National Mediation Board refused or neglected to make the causes public by submitting the issue to a fact-finding board as McNear asked and as the Railway Labor Act directs. McNear in turn refused to arbitrate, maintaining that the law did not require him to do so and that the road could be operated if only the authorities would stop violence in connection with the strike. Shootings and other outbursts interfered with traffic movement to such an extent that the government took over late in March with John Barriger as federal administrator. Thus ended the first open revolt against the handed-down working rules which have generally been incorporated in railroad labor contracts.

★ The Office of Defense Transportation has prohibited, without special permission, any substitution of buses for rail or street railway service.

★ New road locomotive orders for the last month include 10 Baldwin 4-8-4's, 12 Alco 4-6-6-4's, and 3 5400-horsepower E. M. C.'s for Northern Pacific; 10 Baldwin 4-6-6-4's for D&RGW; 5 4-8-4's in company shops for St. Louis Southwestern.

★ Where equipment conditions permit, the railroads are still as willing as ever to run fan trips. The New York, Ontario & Western ran a cameraless fan trip March 29.

★ The New York Central has been quietly carrying out a large number of physical improvements on its property. Under way is a program of signal replacement which will convert all semaphores to approach lighted color-light signals within the next 5 or 10 years. Track and signal improvements at a number of spots allow higher speeds; additional track is in service in the New York suburban area.

★ *The Railroad Enthusiast*, fan magazine published by the Railroad Enthusiasts, 163 Essex St., Saugus, Mass., includes in the March issue (15 cents) an exceptional locomotive article by Kenneth Cartwright, mechanical engineer of the New Haven, comparing the performance and design of that road's Pacifics and Hudsons.

★ Joseph B. Eastman, director of the O. D. T., says that travel as usual will be more and more difficult as the needs of the military increase and as rubber wears out, and he recently urged railroads to tighten pass regulations. He also asked the staggering of vacations and more vacations in Spring and Fall months, and predicted that many large conventions might have to change dates. Ralph Budd, president of the Burlington, urged more vacations starting in midweek, and told that in normal years Friday, Saturday and Sunday travel out of Chicago was 70 to 80 per cent above the total for the other four days, thus forcing inefficient use of equipment.

★ The Treasury's new tax proposals include a 15 per cent tax on all railroad tickets, a 20 per cent tax on Pullman berths.

★ Rep. Voorhis (Dem., Calif.) has suggested that long-distance buses be supplanted by rail transportation for greater efficiency during the war.

Baldwin Locomotive Works.

Foreigner.
Here is the first of 70 Mikado type locomotives ordered from Baldwin by the War Department only three months ago under high priority. The design is for freight service in various parts of the world.

COUNT *THIS* ARMY IN!

THERE'S a trained army more than a million strong working to back up the men in uniform.

It's the army of railroad men, on duty day and night in every state in the Union.

For more than twenty years—ever since the last war ended—this army has been supplied with better and better equipment. And railroads, military authorities and shippers have worked out plans to get more service out of each piece of equipment—to get the most use out of every facility of the world's greatest transportation system.

That's why this railroad army is meeting emergency demands—why, for every minute of the day and night, it is moving *a million tons of freight a mile*—an all-time record for this or any other transportation system in the world.

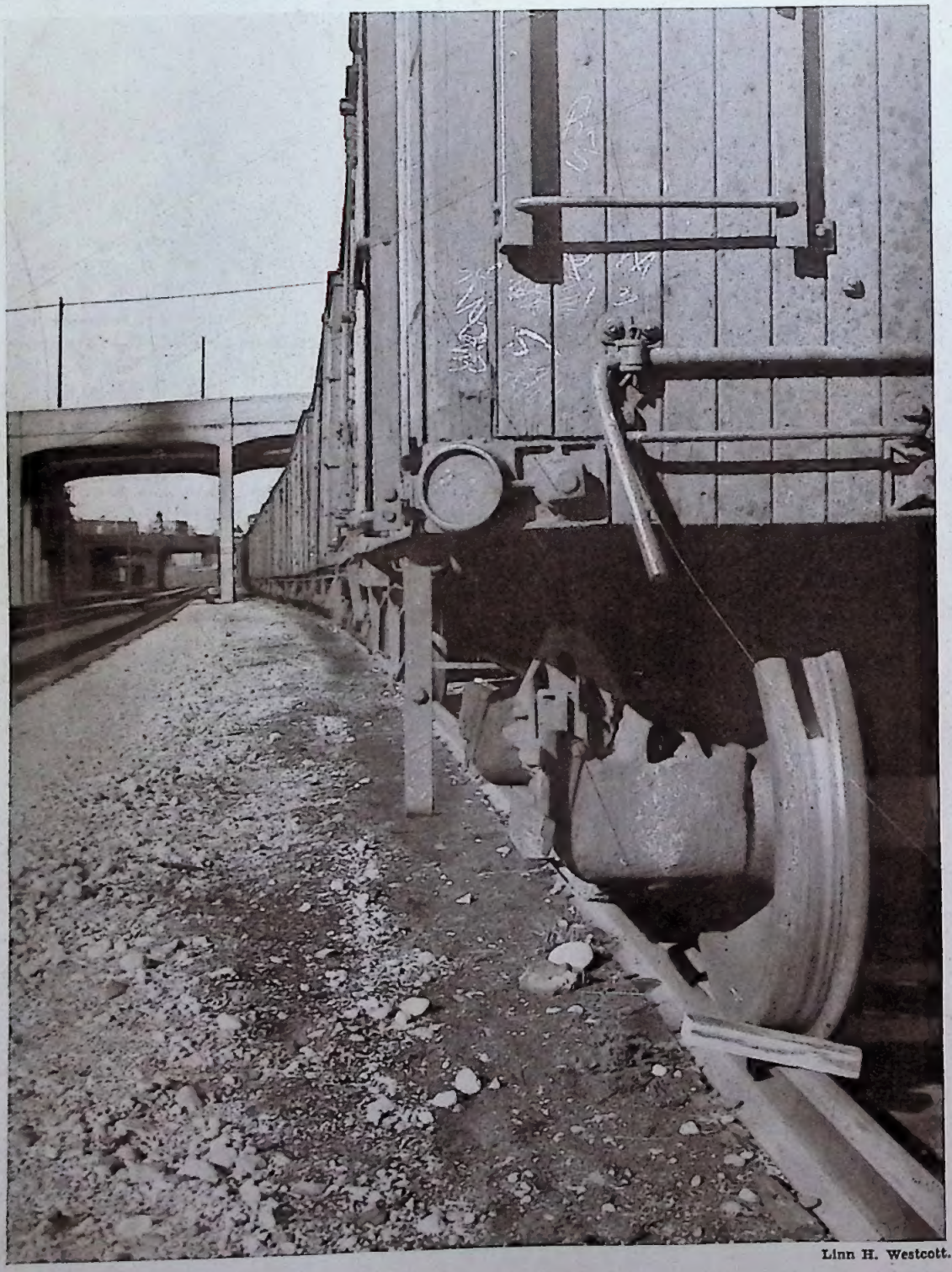
All this veteran army needs, to meet future challenges, is a flow of new equipment great enough to match the rising tide of America's war production.

ASSOCIATION OF

AMERICAN RAILROADS

WASHINGTON, D. C.

Trains



Linn H. Westcott.